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A REVIEW OF THE MEDICAL LITERATURE OF 1905.

EDITORIAL COMMENT.

A PLEDGE AND A PROPHESY.

It has become a pleasant custom for the January number of the INTERSTATE to contain an informal announcement to its readers of the purpose of this review number. To them thus taken into the editorial confidence, is explained why it is that these reviews have a meaning quite beyond the material facts and comments upon them, which they contain. Perhaps it may seem that no such purpose really exists but that one is put there to form the subject of this writing. Even were this true the fact remains that in such work as this there can be found some appeal to the imagination quite apart from the array of prosaic facts which is recorded.

It may be of interest to point out briefly some of the ways in which medicine seems to be advancing and to interpret with the subtle wisdom that is supposed to lie behind editorial expression, some of the currents by which this progress is to be measured. In this way a kind of review will be given but in this instance no names will be quoted, no bibliography be appended and no authority will lie back of what is expressed. For this reason perhaps what is here said may have the interest which so often attaches to the unknown and to the unauthoritative.

Rare indeed is the kind of mind which can understand the current of things in which that mind is playing its part. Frequently there is a certain unwaredness of what the present is, and too often in retrospect is found that which in the actual happening might have been of surpassing interest. If one were gifted with the power not only of living but of seeing some of the present movements in medicine they would furnish a bit of medical history worth while contemplating.

The three important forces in organized medicine to-day may be broadly said to be the medical school, the medical society and the medical journal. It is only by one of these, or by a combination of them that medical opinion can become focused and effective. The evolution in

medical schools has often been pointed out and its slow change has taken place almost unknown to us. From the commercial to the university school is a long step, but more important even than this is the acceptance on the part of the medical profession of this truth. In creating a university spirit in the teaching of medicine there follows as a matter of fact a desire, unexpressed as such, for something of the same standard in the other affairs of medicine. The first to show the effects of this desire is the medical society and in spite of the insistence of this demand there are those who are blind to it, and who see in its expression only the carping criticism of the discontented. It is true that writing or talking of the desired changes are not effective means of bringing them about but beneath there lies the sense of dissatisfaction of which it is well to be aware.

To an inquiring mind of the future the most amazing thing of the present day medicine will perhaps be the multiplicity of medical journals. No profession has anything like as many and no profession perhaps is less in need of so many. If the need on the part of the reader is not insistent and if the necessity on the part of the writer is not so determined, why is the number more than any real necessity demands. To provide that which is not wanted, desired or needed is certainly a waste and at this material time waste becomes an economic crime.

The answer to this is that there is a profit in medical journalism and a profit not depending upon the number of readers but upon the amount of advertising that can be crowded into a given space. Now the change that is actually happening under our eyes is that this space often unimportant for any medical purpose, is to be much curtailed, cut down until the more sturdy of the brotherhood can subsist in its narrow quarters. The standard will become established and those not able to live up to it will gradually lose their importance and in their places will be the others who can. This then is to be the real beginning of what has so often been wished for, the establishment of a real medical journalism and together with this will develop the proper means of giving expression to medical thought in its relation to the civic aspects of medicine. The opinion of a journal has no particular weight at present and it will not have until something of this sort takes place.

That we are living at the time that these changes are taking place ought to be a fortunate thing. If we are able to see the thing happening and to understand the little changes taking place from day to day, we shall learn to mix a little philosophy with everyday affairs. That the INTERSTATE is aware in some measure of these things is a pledge of its sincerity to assist in their final accomplishment. Its purpose will be to interpret as far as wisdom is given to it the little currents setting in towards the larger stream which in time will change the aspect of that which in its structure is not good. In this January number with the literature of a year's effort in its pages the INTERSTATE feels that it can speak with sincerity.

ORIGINAL ARTICLES.

INTERNAL MEDICINE.

IN CHARGE OF

JESSE S. MYER, M. D.

This review will be devoted entirely to a consideration of some of the recent literature on diseases of the stomach. There is certainly no subject in medical literature that has received more painstaking, mature thought from the standpoint of physiology, pathology, medical aspects and surgical. Though there are many problems which have not reached a definite solution, great strides have been made toward clearing them up. It is useless to expect, of course, that definite conclusions can be reached with reference to the treatment of diseases of an organ until the physiology of that organ has been reduced to a definite science. This we cannot say of the physiology of the gastro-intestinal tract. Many of our best authorities are still at variance with reference to certain physiological phases. That is probably due to the fact that the stomach more than any other organ in the body accommodates itself to circumstances, to habits of eating, character of food taken, etc., and for this reason it may never be possible to clear up all of the physiological problems which arise in connection with the stomach and intestines. The evolutionist maintains, and properly so, that the functions of the stomach have varied with the evolution of the animal from the lower to the higher forms, according to the character of food obtainable, etc. Even in human beings there is a marked degree of variation in the gastric secretions depending upon the habits and characteristics of the individuals. It is readily understood, therefore, that in dealing with the material at hand in large institutions, a momentary change in the diet and habits of individuals will not bring about the same conditions in the secretory and motor functions of all, when the previous habits of the individuals have been entirely different. It is probably for this reason that certain discrepancies arise in the results obtained by different investigators working along same lines upon apparently a similar material. In spite of these difficulties, however, the treatment of stomach troubles is being based more and more upon the physiology of that organ, a knowledge of dietetics, etc., etc. The terms indigestion and dyspepsia are becoming things of the past, conveying nothing to the mind of the thinking physician because he is well aware that they are merely expressions of a symptom of one

of a large number of affections. There is no organ in the body which requires more careful investigation than does the stomach in the effort to arrive at a definite diagnosis. The number of symptoms directly referable to the stomach are very few in number, and any or all of them may occur in each of the different diseases of the organ. Indeed, patients manifesting identically the same symptoms may have entirely different pathological conditions. It is necessary therefore, in every case in which there is the least doubt as to the existing conditions, to make a careful determination of the gastric secretions and gastric motility.

There is certainly no subject in medical literature which has received greater attention than has that of ulcer of the stomach, and while no epoch-making results have been attained in the past year, many links have been added to the chain that will make ultimately for the perfection both of the diagnosis and treatment of this unusually interesting condition. Ulcer of the stomach, since the time of Cruveilhier, has received an unusual degree of thought because of the uncertainty of its pathogenesis, and even today we are not altogether clear upon this point.

Block[1] attributes the fact that round ulcer of the stomach is found more frequently on the lesser curvature of the stomach than at the pylorus, to anatomical relations which he has observed in stomachs fixed and examined immediately after death. These portions of the stomach have the same appearance in the dilated as in the contracted state, while the muscles of the other portion contract firmly and thus protect its mucous membrane from the action of the gastric juice. In the muscles of the newborn dying from gastro-enteritis are found ulcers which have originated from hemorrhagic erosions, and the epithelium seems to be seriously damaged through hemorrhages to the mucous membrane. He believes that bacteria do not play any role in the production of ulcer.

Ackerman[2] considers trauma and chronic pressure an important factor in the origin of ulcer of the stomach and cites a number of cases in support of his belief.

Fertig[3] has added a valuable contribution to the subject of the traumatic origin of ulcer in a case in which he was able to demonstrate absolutely the connection between the injury and the development of the ulcer. As a rule we must rely entirely upon the history which we elicit from the patient for our association of trauma and ulcer. In this particular case a laparotomy was made following a kick in the abdomen but the exploration revealed nothing. A few days later, however, hemorrhages from the stomach occurred, the patient died and the autopsy revealed four gastric ulcers.

Payer[4] has also added to the literature on the etiology of ulcer of the stomach. He succeeded in producing experimentally erosions, infarcts and hemorrhages in the stomach through the introduction of emboli into the omental and mesenteric veins. These experiments together with a number of clinical observations lead him to the belief that there is a relationship between appendicitis and the secondary gastric disturbances which follow. He calls attention to the colics, pain, vomiting, etc., which so often occur after the first attack of appendicitis, and believes that in many cases these symptoms are indicative of ulcer of the stomach, in fact, he was able to demonstrate frequently small fissures and ulcers in the region of the pylorus in these conditions. He attributes this to emboli resulting from thrombi in the veins. These emboli may come from the omentum, from the appendix or from the mesentery. Strange to say the removal of the appendix suffices to produce a cure of the gastric symptoms. Though his experimental work is conclusive, this last statement seems to disprove rather than to prove his belief, for it seems very improbable that even though the ulcer may have had its origin from emboli coming from the appendix, that the removal of the appendix should in any way influence the ulcer thus formed.

Wegele[5] points out the difficulties of diagnosis and mentions among those conditions with which it may be confounded, neuroses, gall stones, cholecystitis, etc., etc. After reviewing the points of diagnosis he lays great stress upon the anesthetic action of orthoform in these conditions. He maintains that the pain produced by loss of tissue in the stomach is promptly relieved by orthoform administered internally On the other hand, if on an empty stomach a patient is given nitrate of silver in the presence of an ulcer a burning sensation will be produced. If patients are accustomed to the use of the stomach tube, a 20 per cent solution of the chloride of iron may be used in order to determine whether or not the burning sensation is produced thereby. Another important diagnostic aid is the determination of traces of blood in the stomach contents by the aid of the microscope, the guiac-turpentine test, or any of the other exact methods.

Hewes[6] reports excellent results in what he sees fit to term laboratory diagnosis of gastric ulcer. In one hundred and sixty cases of stomach trouble the diagnosis of ulcer was made in 12 cases and was demonstrated to be correct in eleven. He points out the advantages of careful laboratory methods in the examination of this condition.

Clemm[7] lays the greatest stress upon the pain in gastric ulcer and believes that the periodical paroxysms dependent upon the ingestion of food usually immediately after eating, sometimes during the process but most often within a half to two hours afterward, are indicative

of the presence of an ulcer. The author presents in this little work a most exhaustive consideration of the subject of ulcer of the stomach in all its phases.

In the physical diagnosis of ulcer of the stomach, pain and hemorrhage still remain the chief factors. The location of the pain seems to have but little significance, however, in locating the ulcer, for the pain is not necessarily over the lesion. Many ulcers exist for a long period of time without producing any pain, and pain exists frequently in the epigastrum due to other causes than ulcers. Though an important factor in the diagnosis pain in the epigastrium may not be considered a pathognomonic sign of ulcer, as some believe.

Riedel[8] attributes pain in the epigastrium to one of three causes, (1) reflex, (2) transmitted from neighboring organs, (3) ulcer of the stomach. Among the reflex causes may be mentioned acute and chronic appendicitis, epigastric hernia, scars of old ulcers, disturbances in the transverse colon, appendices, epiplociae, etc. Among the pains transmitted from neighboring organs may be mentioned gall stones and all of its allied conditions, movable right kidney, ulcer of the duodenum, etc. In all of these cases the transmitted pains in contradistinction to the reflex pains are on the right side. In ulcer, depending upon the location, the pain may be on the right or left side or in the middle line. Riedel believes that the left-sided pain rather points to the existence of ulcer, while the right may be transmitted from other organs, and believes, therefore, that in the interest of an early diagnosis the left-sided epigastric pain cannot be valued too highly.

Pitt[9] reports 17 cases of ulcer of the stomach in which the original symptoms did not point to the primary disease, in other words, the symptoms were not associated with the organ involved. In seven cases there was ascites, in three intestinal adhesions, in two occlusions of the bowels and in two pus in the abdomen, in two a high degree of anemia and in one a tumor in the right ileo-cecal region which was taken for a tumor of the ovary.

Mouthin[10] attributes the pains of gastric ulcer to the sensory nerves in the parietal peritoneum, or in the subserous tissues. Every movement of the stomach for this reason produces pain, and for this reason, too, those ulcers furtherest removed from the parietal peritoneum, namely those of the anterior wall of the stomach produce the least pain. The fact that the lymph vessels of the gastric walls extend to the parietal peritoneum causes it to be all the more sensitive.

Riegel has stated that the diagnosis of ulcer in the absence of any hemorrhage from the stomach, was always a problematic diagnosis (Eine Warscheinlichkeitsdiagnose). However, it does not follow that

hemorrhage occurs in every case of ulcer of the stomach, and inasmuch as this is true, there would necessarily be a great many cases of ulcer of the stomach in which we could not make a definite diagnosis.

Connell[11] suggests the title "hemorrhagica gastrica" for all hemorrhages from the stomach, whatever may be their cause and suggests this in view of the fact that there is a hematemesis and expulsion of blood from the rectum without a preceding gastric hemorrhage, and on the other hand, gastric hemorrhages, without these manifestations. He considers the passage of blood from the bowel of little diagnostic significance so far as the stomach is concerned. Hematemesis is here the important factor and may vary from occult hemorrhages to severe, acute forms.

Haim[12] studied 80 cases of perforating ulcers, 8 of which were under his own observation and 72 described in the literature. The symptoms were always spontaneous pain at a circumscribed point, sensitiveness to pressure, vomiting, shock and collapse. Then follows the quiescent period, during which stage the examination reveals nothing. The prognosis depends entirely on the promptness of surgical interference.

Croce[13] describes similar cases and maintains that a cure can only be effected when the patient is operated upon within twelve to twenty-four hours.

Lund[14] reports several cases of subacute perforation and presents a careful review of the literature, in which Brinton claims that a large majority of ulcers are on the anterior wall and the lesser curvature while Lindner and Pariser claim that 95 per cent are on the posterior wall. The severity of the symptoms depend upon the size of the perforation. Such perforations have been spontaneously closed by adhesions with the omentum.

Scudder[25] reports cases of perforated duodenal and gastric ulcers which have come under his observation and believes that it is possible to differentiate between them if one sees the patient immdiately after the first peritonitic symptoms. He reviews carefully the symptomatology and recommends, of course, immediate operation. He suggests that gastro-enterostomy be done in these cases as soon afterwards as the general condition of the patient will permit it.

Sears[15] reports the results of the medical treatment of peptic ulcer at the Boston Hospital. He found that in 2,100 autopsies 29 cases of ulcer were found. In one of the Boston hospitals there were 104 cases treated in ten years, in another 184 cases in 29 years. In following the cases treated he found a recurrence in about 60 per cent.

Francine [16] investigated the incidents of gastric and duodenal ulcer in Philadelphia and concludes that the autopsy shows a far

greater percentage of ulcer than clinical observation. According to Howard ulcer is found both clinically and anatomically less often in America than in Europe and in the north and eastern part of America oftener than in the south. Among the causes of ulcer he enumerates anemia, hyperchlorhydria, sedentary habits, injury, chlorosis and menstrual disturbances, emboli and thrombi, burns, nephritis and tuberculosis. He believes that the last two are the causes of most of the chronic ulcers. According to Biernacki the gastric secretions are decreased in nephritis and as a result of this fact organic changes take place. The author reports forty-two cases of ulcer in 2800 autopsies in a period of ten years, 17 of these cases were in chronic nephritis, 12 in tuberculosis.

Wirsing[17] reports his observations in 320 cases of ulcer of the stomach, and considers at length the etiology and diagnosis of the condition. His statistics show a marked discrepancy in the number of permanent and temporary cures, which he explains through the tendency of ulcers to recur. The very nature of the treatment for ulcer predisposes one to a recurrence. The resistance of the patient is naturally lowered through starvation. The author tested in forty-two cases the method of Lenhartz, which consists in giving the patient a rich albuminous diet throughout, beginning with two raw eggs and 200 ccm. of milk gradually increased to eight eggs and a litre of milk per day. The results of this method were far better than those of the Leube-Zeimssen method both with reference to temporary and permanent results.

In the medical treatment of gastric ulcer but little that is new has been presented. There is some difference of opinion as to what is meant by rest in the treatment of this condition, namely, whether the stomach should be put at absolute rest through withholding all food by the mouth and resorting entirely to nutrient enemata, or whether it is better to give these patients small and frequent quantities of easily digested food such as milk and eggs. The best results seem to be attained by giving the patients small quantities of milk and eggs from the very start providing no recent hemorrhage has occurred. The results of Greenough and Joslin seem to have been borne out by recent investigations. They found at that time that 32 per cent. of those who received no food by the mouth were cured, i. e., left the hospital free from symptoms, in contrast to 44 per cent. of cures in those patients who were given small quantities of milk and lime water from the outset.

Reichmann[18] calls attention to two disturbances which often accompany the starvation treatment of peptic ulcer of the stomach. One of these complications is rapid loss of strength in the early part of the

treatment. This is often so marked that it leads to fainting attacks, disturbance in the heart's action, palpitation, dyspnoea, etc. When this train of symptoms arises it becomes necessary to abandon this treatment and resort to some other. This complication is most apt to occur in neurasthenic individuals. The second complication which the author has observed is the development of inflammatory processes in the parotid gland, with pus formation and all of its consequences. He has met with but three of these cases in twelve years' experience but attributes this to prophylactic treatment which he has adopted in these cases. Though no bacteriological examinations were made, he attributes this phenomenon to the accumulation of pus producing bacteria in the mouth, due to the absence of those motions which cleanse the mouth when eating and the diminution of the salivary secretions. One of these factors, mechanical and the other physiological are in a measure dispensed with in those taking the starvation treatment, and bacteria are thus permitted to accumulate in the mouth. The author for the past few years has avoided this unpleasant complication through the frequent cleansing of the mouth, teeth, gums, etc., with a 4 per cent. boric acid solution, and since adopting these measures has not met with a single case. In spite of these unpleasant occurrences, however, the author still highly recommends the starvation diet in the treatment of peptic ulcer of the stomach.

Shattuck[19] adheres very strongly to the medical treatment of ulcer, in which he recommends small amounts of liquids after three or four days of exclusive rectal feeding. He believes that cicatricial contraction at or near the pylorus causing dilatation, and perforation are the only features of peptic ulcer which seem to clearly demand surgical treatment in the present state of our knowledge.

It is doubtful if any absolute rule should be laid down in the feeding of ulcer cases, for experience teaches that different cases respond differently. There are those cases in which pain is persistent and improvement retarded by the ingestion of any food whatsoever, while there are others that bear liquid diet well at all times. There is no doubt, however, that all things being taken into consideration, feeding is the logical procedure in a large majority of cases.

It scarcely seems in place to discuss under the head of internal medicine, the surgical aspects of the treatment of ulcer. However, since the internist first comes in contact with these cases, it is necessary that he should have a very definite knowledge of the surgical indications. Regardless of what the future may bring forth, ulcer of the stomach is today in a large measure a surgical disease, and though we all agree that a very painstaking effort should be made to bring about a cure through medical treatment, we must also concede that if we

fail, or if there are frequent recurrences of the symptoms, an operation should be resorted to. Mumford[20] and Stone, the one a surgeon, the other an internist, have presented a most admirable work on the surgical aspects of digestive disorders. They say in their argument, "we can not say of disease of the bile passages and of gastric ulcer what has come to be said of appendicitis, that they are purely surgical diseases, but we believe we can show that in many instances they are so, and we insist that in all prolonged or severe disorders of such nature, the views of a properly qualified surgeon should be sought. In other words, such diseases have passed out of the hands of the internist acting alone. He must share with the surgeon the responsibility and share it early." Through considering the diseases of the stomach "from different, but not opposing points of view" they have succeeded in presenting a most impartial review and consideration of this subject.

McCasky[21] believes that stomach troubles which do not clear up in six weeks call for a careful, skillful examination, the determination of the secretion and the motility of the stomach. If after careful treatment improvement does not follow, sooner or later an exploratory operation should be done. We believe that this is a bit far fetched, for there are a number of conditions, among which might be mentioned chronic gastritis, which might persist under the most careful treatment and in which an exploratory operation would reveal nothing and surgical therapeutics would avail nothing. McCasky bases this statement upon the belief that the mortality in exploratory laparotomy would be less than in the possible overlooking of incipient carcinoma, ulcer, etc. He does not consider the loss of weight the first symptom of either ulcer or carcinoma. If there is no pyloric stenosis a patient with either may even gain weight. Value is to be attached only to a combination of symptoms observed by an experienced diagnostician. In reviewing the literature he finds that gastrectomy gives a mortality of 30 per cent, according to Haberkant of 27 per cent. This must be considered, therefore, a dangerous procedure, and for this reason he recommends that the diagnosis should be made by the family physician before such a serious operation becomes necessary.

Sears[15] also points out the importance of the physician becoming skillful in the examination of gastric diseases, and believes that through the prompt operation, in cases of ulcer, there may be avoided cancerous degeneration, perforation, scar formation, etc. He does concede, however, that even in some of the operative cases recurrences occur, especially in the jejunum. He states, too, that cures have not been effected in all of the operated cases. Hemorrhage, on account of the difficulty of locating it, must be treated internally. Rodman had

a mortality of 37 per cent. when operating for hemorrhage. Robson, 60 per cent. Moynihan points out the usefulness of attempting to remove the ulcer for hemorrhage and recommends a simple anastomosis. The statistics which he was able to collect with reference to the formation of carcinoma on the basis of an ulcer are varied. Kollman found but fourteen authentic cases while Mayo believes that 60 per cent. of his cases of malignant disease are due to ulcer. Sears concludes that (1) the failure of internal treatment calls for surgical interference, (2) the dangers are not increased thereby, since the mortality is not greater in the end, than in internal treatment, (3) the results must not be based on statistics of the immediate results obtained but upon the end results, (4) the surgical treatment of hemorrhage is of doubtful value, (5) in doubtful cases there should be a very definite understanding between physician and surgeon.

Mayo[22] has done gastroenterostomy 230 times for ulcer and found 60 of these in the duodenum alone. He believes that neither post mortem examination or clinical studies have given the correct idea of the frequency of these lesions. He states that nothing is to be expected from operation upon nervous individuals with gastric neuroses and almost equally little from operation upon those who are the subject of a chronic dilatation merely. Patients who have actual mechanical hindrance to the passage of food through the pylorus are those who profit most by surgical interference. He does not operate in the case of an acute ulcer unless a complication such as perforation, hemorrhage, etc., call for surgical interference.

Mayo-Robson[23] claims a cure of 92 per cent in the surgical treatment of chronic ulcer of the stomach. In the entire list of his operations the mortality has been but 3.7 per cent. He has made a careful study of the remote results of his operations and firmly believes in the efficacy of this treatment.

Tiegel[24] reports a number of cases of ulcer of the jejunum following gastroenterostomy. The author had met with five such cases and had collected sixteen from the literature. It is very difficult to make an exact diagnosis of this condition but we are most likely to have to do with a jejunal ulcer if acute, perforative symptoms present themselves after gastro-enterostomy.

Bettman[26] is somewhat skeptical with reference to the modern trend of gastric surgery and expresses the fear that it will be greatly abused. After carefully summing up the literature on the subject his conclusions are (1) in America about 1 per cent. of the population present a gastric ulcer or scar in the autopsy room. Clinically not more than .2 per cent. of all patients suffer from gastric ulcer. (2) Under appropriate treatment the severer complications of gastric

ulcer can be largely prevented. (3) The mortality from gastric ulcer is grossly exaggerated in surgical literature and under proper medical treatment does not exceed four per cent. in all classes of private patients. (4). The American surgical literature on gastric ulcer abounds in exaggerations, crudeness and recklessness. (5). That gastric ulcer predisposes to gastric cancer to any marked degree is improbable, that the majority of cancers are preceded by ulcer is certainly untrue, that gastro-enterostomy would prevent such metamorphosis has not been demonstrated. (6) Gastro-enterostomy has a certain mortality. It often fails to relieve gastric disorders due to ulcer. It should be followed by careful dietetic treatment, and it may lead to fatal complications, irrespective of the primary disease. (7) Pyloric obstruction is not in itself an indication for surgical interference. Many cases recover under medical treatment. (8) Our patients will be best served if they submit to proper medical treatment and seek surgical advice only at the suggestion of their medical attendant.

The other extreme is represented by Haggard[27], who has performed gastro-enterostomy in patients with persistent gastralgia even in the absence of any other symptom.

The above quotations simply go to show the present state of indecision among surgeons and internists as to the surgical interference and the medical treatment of ulcer. That there is a marked degree of recklessness evinced among surgeons with reference to this disease there can be no doubt, and there is great danger of gastric surgery being greatly abused if indeed we may not say that such has already been the case. When one considers the difficulties of differentiating ulcer from gastric neuroses, gall stones, adhesions, etc., and on the other hand views the unconcerned manner in which certain surgeons make diagnosis of gastric ulcer and resort at once to gastro-enterostomy, cannot help being somewhat skeptical with reference to the modern trend of gastric surgery. The difficulties attending the diagnosis of gastric disturbances should make one all the more reluctant in recommending operation until through all the means in his power he has reached as definite a diagnosis as possible. Careful observation for a prolonged period of time is often necessary in reaching a diagnossis, and yet we find a patient going to the hospital one day and after a mere, and often careless, taking of the history, he is operated upon the following day. That gastro-enterostomy is to be recommended in many cases of ulcer, there can now be no doubt, but not, however, until every effort has been made to bring about a cure through medical means. Only the future can tell how much good and how much harm is being done by the surgeons in these cases. The tendency is as yet too young and statistics too meager to permit of definite conclusions.

It is safe to prophesy, however, that gastric surgery will reach its proper level just as has the surgery of the pelvic organs.

Pyloric stenosis in infants presents one of the most fertile fields for investigation among gastric diseases. The condition has received a marked degree of attention within the past year both on the part of pediatrists and internists. Still,[28] on the basis of 20 cases, gives an interesting description of the so-called hypertrophic-pyloric stenosis with a careful consideration of the diagnosis and treatment. The chief symptoms are the persistent vomiting, and visible and palpable peristalsis of the stomach, and a palpable thickening of the pylorus. Male children are much more frequently affected than females, of these 20 cases 17 were boys. The term congenital is hardly applicable to the condition inasmuch as it rarely exists at birth, or at any rate does not manifest itself then. The symptoms usually begin to manifest themselves about the end of the fourth week. The author warns against making a diagnosis from the vomiting alone in the absence of the visible peristaltic movements of the stomach. There are several methods of treatment among which may be mentioned regulation of the diet alone, nasal feeding, lavage, and surgical interference. In the author's opinion lavage seems to offer the best results. He recommends operation only after all other efforts have failed.

Wachenheim[29] collected 67 cases of pyloric stenosis in the literature and recites a case in which in the fifth week after birth vomiting and constipation began. There were neither tumor nor peristalsis visible. The autopsy, however, revealed a large, thick muscular ring about the pylorus almost of the consistency of cartilage.

Schmidt[30] observed two cases. He believes that most of these cases have an anatomical basis and are only improved by surgical interference. Cases of pure pyloric spasm are very rare. These as well as the relative organic stenosis with compensatory hypertrophy present a grateful field for internal therapy.

Torkel[31] made a careful histologic investigation in a case of congenital hypertrophy of the stomach and finds that it is due chiefly to an acute hyperplasia of the muscle. In these hyperplastic muscles there may be small cell enclosures that point to embryonic origin and are proof that these changes are truly of congenital developmental origin.

Ibrahim[32] presents a most exhaustive review of this subject with a presentation of seven cases under his own observation. He believes that the condition is an anatomical stenosis which is cured through a compensatory hypertrophy of the stomach. The condition must be differentiated from atresia of the pylorus, congenital tumors of the pylorus, stenoses due to scar, intestinal stenoses and atresias and the ar-

terio-mesenteric intestinal obstruction at the duodeno-jejunal boundary, and pure pyloric spasm.

Binet[33] presents a very important contribution on the influence of alkalies upon the functions of the stomach. Sodium bicarbonate, calcium phosphate and magnesium increase through stimulation the gastric secretion. This action continues up to the point of saturation of the hydrochloric acid in all three cases but in different degrees. This action is slight after sodium bicarbonate but very marked after magnesium. Sodium bicarbonate also stimulates the motility of the stomach through the liberation of carbon dioxide. It acts upon the sensibility only when the pain develops a long time after eating. And such pains do not always point to hyperacidity. Strange to say often when the pain is greatest the stomach either contains no free hydrochloric acid, or less than one finds in a test meal which has caused no pain. These pains, therefore, are dispelled more promptly by sodium bicarbonate, which neutralizes but little acid than by magnesium and calcium, which neutralize more acid. He believes that this pain which develops some time after the ingestion of food, is due to pyloric spasms which are relieved by sodium bicarbonate because of its tendency to aid in emptying the stomach through the stimulation of the motor function.

Kaufman,[34] after the examination of gastric contents of both healthy and diseased individuals, comes to the conclusion that too much value is laid upon the acid determination. High and low acid values are found in perfectly healthy individuals. Often those presenting typical symptoms of hyperacidity give no higher acid values than do healthy individuals. These disturbances, therefore, must be brought about by other factors, chief among which is gastric atony.

Albu[35] differentiates four forms of hyperacidity, (1) a pure nervous secretory disturbance, (2) accompanying chlorosis, (3) prodromal stages of peptic ulcer, (4) the expression of gastritis chronica hyperplastica.

Moore[36] made analysis of the contents of the stomach in cancer of other organs than the stomach. In the majority of cases he found a marked reduction of the total acidity, free hydrochloric acid being absent in 11 out of 17 cases. In the others there was almost invariably a marked diminution. After the removal of the growth there was no change in the production of the acid. The cause of the diminution of the hydrochloric acid in these cases has not been entirely cleared up. The author considers it the result of the increased alkalinity of the blood plasma, whereby the concentration of the hydrogen ions are diminished to such an extent that the production of hydrochloric acid is entirely checked.

Chase[37] presents a review of the literature on the subject of hydrochloric acid diseases of the stomach and the results of his own observation based upon clinical and laboratory studies. He has noted the effects of large doses of hydrochloric acid upon the gastric functions and comes to the conclusion that there is but little to be said in favor of the use of large doses of hydrochloric acid, and that there is some evidence that its employment may be harmful. He believes that the use of small doses tends to relieve certain symptoms but questions if it ever improves any function of the stomach. It is chiefly from the nervous disorders that favorable results come from the empirical use of the acid.

Summerfield and Roeder[38] made a series of experiments upon the physical changes which fluids of different molecular concentrations undergo in the stomach. His investigations are of special interest because he was able to exclude the saliva as a factor. The experiments were conducted upon a child with complete stricture of the oesophagus. They found that every solution in the stomach uninfluenced by the saliva changes its molecular concentration. Solutions isotonic with the blood become more dilute while the hypertonic solutions become more concentrated. The hypertonic solutions after remaining in the stomach for an hour show a higher freezing point than the blood.

Ackerman and Gompertz[39] call attention to the importance of a microscopical examination of the "fasting stomach contents" in making a diagnosis of diseases of the stomach. They describe the microscopical appearance of the normal secretions and point out a comparison with abnormal conditions. Abnormally we may find when there is no stagnation and no hydrochloric acid, unchanged leucocytes and epithelial cells and sometimes pus, blood, mucous, myelin bodies and sometimes infusoria. When there is stagnation with hydrochloric acid the findings would be food remnants, sarcinae, yeast cells and possibly blood. Stagnation and absence of hydrochloric acid, the Oppler-Boas bacilli, yeast cells branching and the absence of sarcinae, indicate cancer. For the development of infusoria four conditions are necessary, (1) the absence of hydrochloric acid, (2) the presence of alkaline reaction, (3) the absence of stagnation, (4) the existence of pouches or deep folds in the gastric mucosa.

Ury and Lilienthal[40] find that in two-thirds of all carcinoma cases albumose occurs in the urine. The results of such examinations vary however, in some cases, at different times. In 68 examinations, 38 positive reactions were found. In occasional cases albumosuria is noted in benign-intestinal diseases. The enterogenous albumosuria seems very improbable. In order to explain the existence of albumosuria in carcinoma of the intestinal tract, the histo-genetic origin must

be taken into consideration. While an undoubted diagnostic significance can not be attributed to this reaction in the urine its presence upon repeated examinations, would greatly strengthen the probability of the existence of malignant diseases of the intestinal tract.

Hulst[41] made careful x-ray examinations of the stomach and intestines. His pictures of the normal colon and stomach, semi- distended with milk and bismuth vary greatly from the illustrations in the text-books on anatomy. He believes that the current conception of the size, shape and normal position of the stomach is bound to be modified in the future. The patient should be skiagraphed in standing or sitting position and not in the reclining position, since this position gives false results. He gave his patients meals including large amounts of bismuth. The first picture taken immediately after the meal indicates the position of the stomach, the second picture, taken four to six hours later, determines the relative length of time needed for the stomach to empty itself of the bismuth, and the third picture is taken from ten to twelve hours after the digestion of the meal to determine the location of the colon. Judging from the length of time the bismuth remains in the caecum, he believes it to be more of a receptacle than is the stomach.

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SURGERY.

IN CHARGE OF

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If any leading tendency can be said to have developed in the past twelve months it is that the trend of surgery has been away from the purely anatomic and toward the physiologic. It is universally recognized that surgery along purely mechanical lines has reached its highest development in this country probably with the Mayos, in England with Robson and Moynihan, and on the Continent with Mikulicz (just dead), and Kocher. Further advancement must come along lines suggested to us by physiologic consideration. In our own country George W. Crile and Harvey Cushing may well be said to lead in this endeavor. Their especial productions are too well known to need extended mention here. If the surgery of the future realizes what they seem to have reason to expect we are sure to note advances no less startling than those which succeeded the advent of anesthetics and antiseptics.

During the last year renewed attention has been called by Schloffer to the value of balsum peru as an adjuvant in the treatment of wounds. He states that histologic investigation has shown an extensive lococytosis in the neighborhood of this drug. On the other hand an inflammatory reaction never takes place. Another peculiarity of the material is that a very considerable number of days are required for its absorption from any given location.

Kuester described a very interesting case of local tetanus cured by the injection of antitoxin into the nerves supplying the region affected. The patient cut his hand and infected it with tetanus bacilli. Upon the occurrence of local symptoms and also on the commencement of general symptoms the brachial plexus was injected, with great resulting improvement during the next twenty-four hours and, finally, a complete cure.

An excellent suggestion with regard to the use of gauze on open wounds comes from Lauenstein. In order to avoid injury to granulation tissue which is so common, he advises that the layers next the wound be soaked in paraffin. This has the advantage of allowing excreta to pass through. Local tetanus received consideration at the hands of Axhausen, who reports a case of injury to the hand followed by this form of infection. On the 36th day the general symptoms commenced to disappear spontaneously, and on the 50th day the local

spasm began to improve. The child recovered perfectly, and ten similar cases are reported from the literature.

It is interesting to read what Bernhard writes about the open treatment after skin transplantation. He places his patients where the sun can shine on them and says that in a quarter of an hour the grafts are firmly dried in place. At the same time he mentions that a similar treatment has an astonishing effect on the growth of epithelium over a granulating surface. Of course one must take into consideration the fact that Bernhard worked up in the Engadine Valley in Switzerland, about 6,000 feet above the ocean's surface. Mention must be made of Sueves article on the treatment of burns and skin grafting. He also used no dressing at all but allowed the air to come directly into contact with extensive burned surfaces, merely powdering them with stearate of zinc. He kept the wounds as clean as possible and removed every bit of fluid excretion by washing the wounds with saline. Further than this, it is simply necessary to keep the room temperature at about that of the blood, and bathe the healthy skin with water occasionally.

An instructive article on ascending currents in mucous canals was contributed by Bond who worked on a fecal fistula and noted the elimination through it of colored material which was injected through the anus. He finds that cathartics do not abolish this backward current, and that it takes it three days for a given particle to travel the full length of the large bowel backward. In the same way material travels backward up the uterus and tubes. The same may be said of the biliary apparatus and of the milk glands. This exceedingly interesting article wil more than repay a reading of the same in full.

Existing theories on Cargile membrane were shattered by Craig and Ellis. It is hardly necessary to go into the details of their interesting and valuable work. It can be said in a word that they practically upset all theories on the subject.

New light was thrown by Katzenstein upon the subject of collateral circulation. He made ninety-eight animal experiments and came to the conclusion that new arterial routes are established by a central increase of pressure as well as by peripheral diminution of the same. In order that this may be properly accomplished a particularly strong, healthy heart is necessary, else the strain would be too great for it. Collateral circulation is established in the vessels which lie between the aorta and the femorals in the space of about three months.

Friederich, who has done so much well known work in surgical bacteriology, published a valuable article on the treatment of infected wounds. The leading suggestion contained in it is that the free excision of wound edges should be practiced much more commonly than

it is at present, as it is even possible by this means alone to obviate local as well as general symptoms.

Some striking points were recently brought out by Legge in an article on industrial anthrax. He states that fully one-half of the 3,000 packasses which were taken on the last expedition to Thibet, died of this disease. Where the antitoxin was used strikingly good results were obtained. During the last epidemic in Italy the death rate was only six per cent., whereas it had been twenty-four per cent. previous to the introduction of the antitoxin.

Fatal poisoning with boric acid is recorded by Dopter. This was on a burn in a 10 per cent. paste of which 80 grammes were applied. This will no doubt surprise many surgeons, who are in the habit of using this drug in a way which suggests confidence in the fact that it is perfectly harmless.

It is interesting to note that Hartman and Weirich were successful in grafting skin taken from amputated extremities. They did this several times, making large Krause grafts and being perfectly satisfied with the results. The use of this method certainly simplifies a procedure which has in the past been attended with very many difficulties.

Mention must be made of an article by Praessler on the pathology of Basedow's disease. He experimented with the extract obtained from the thyroid gland of such patients and found that it had no effect on animals, similar to the manifestations which we see in the human, hence, we would arrive at the single conclusion that we have in this disease no such direct toxic effect as we ordinarily ascribe to ptomain poisoning.

A most valuable and original suggestion is made by Harvey Cushing for the teaching of surgical technique to students. Dr. Cushing has been successful in having a veterinary hospital built by the Johns Hopkins Medical School, and in this he accomplishes two objects which were never attained in the old way of teaching the subject. In the first place he has the great advantage of handling living, bleeding tissue, and in the second the students learn as much as they have a mind to of the disease at hand. With this latter object in view, histories of humans similarly affected are taken from the Johns Hopkins surgical clinic and are made the basis of a study of the symptoms presented. Those who are teaching this branch of surgery cannot do better than profit by the suggestions contained in this well known author's article.

Existing theories on shock and hemorrhage received little consideration in the valuable article by Crile, which was published last June. His work has been wholly experimental and has in no sense followed the beaten paths. Both of these lesions manifest themselves in a low-

ered blood pressure in the arteries and increase of that in the veins. Increased intra-cranial tension, from whatsoever cause, is accompanied by a general increase of blood pressure, and this latter must be maintained if danger is to be avoided. This lengthy article contains so many golden suggestions for the practical surgeon that it must be read in the original to be appreciated.

New light is thrown upon surgical physiology by Crile's article of last August. In it he goes minutely into the clinical differences between inhibition and obstruction of respiration. He considers at length the many new features of general and local anesthesia, as well as the value of blood pressure registration in many conditions. His work in resuscitation reminds one of the days of magic and will almost be impossible of belief to the one who has not personally observed it.

Renner, following the suggestion of Mikulicz has written an instructive article on artificially produced leucocytosis as a means of increasing the resistance of the body to infection. He shows that the introduction of salt solution into the peritoneal cavity or the subcutaneous injection of nucleinic acid will both of them bring about a considerable increase in the number of white blood cells. The colon bacillus has been affected more than any other with which the author has as yet experimented, and though clinical tests seem to give the method some value, still it is doubtful if enough of an effect can be produced to make it generally highly useful.

Cancer furnishes a never ending source of study. It interests the profession and the laity alike, and while some fresh light has been shed upon various aspects of the matter, still the subject is apparently as far from a definite solution as it ever was. A highly suggestive article emanated from Juliusburger who studied the 7081 fatalities between 1885 and 1889 noted in Prussia alone. As a result, he finds that the number of cases is constantly on the increase, but among the better class rather than the lower class of women. More men, however, are effected than women. The average of death was 55 1-5 years. In the order of their mention the following organs were involved: stomach, uterus, liver, intestines, esophagus. The chief causal factor noted is heredity. Castration for cancer of the breast is again urged by Michels, who claims that a great improvement in the patient's condition follows the method. However, he grants that most of the patients finally succumb to the disease. He reports the results in 99 cases.

It is interesting to read what Prof. Von Bergmann wrote concerning the diseases which antedate cancer. Those that he mentions are

acne, cirrhosis, lupus, xeroderma pigmentosium, as well as all scars, fistulae, ulcers, eczema, warts, and birth marks. Suggestions coming from so vast an experience, and an authority so eminent, must be duly regarded to say the least.

Mention must be made of a case of acute haematogenic carcinoma reported by Lippmann. The case was originally one of stomach cancer, which spread suddenly through the blood stream to every conceivable tissue of the body.

An instructive article by Teissier treats of chronic rheumatism and cancer. He states that there are families, one branch of which has suffered for generations of cancer, and another branch of rheumatism. He states that these two diseases are decidedly prone to occur on the borders of various bodies of water and in moist regions. He has further noted that manifestations of these two diseases alternate in the same individual, but they can exist and develop side by side. Some new light on the operative treatment of cancer of the breast was shed by Warren in his recent article. This now well known article, with its beautiful illustrations, may be said to base its claim to novelty on the manner in which the skin flaps are brought together to avoid the necessity of grafting.

Dr. Willy Meyer's article of last summer, describing his results in 70 such cases forms a valuable contribution to the operative treatment of this disease. Dr. Meyer was probably the first surgeon to suggest the operation which is now most commonly performed, namely, the dissection of the axilla which commences at the lowest point on the axillary vein and proceeds systematically inward and downward toward the waist line.

Every year there is a renewed discussion of anesthesia and anesthetics. New drugs and new methods of administering them are being constantly suggested. In spite of this, however, the use of ether alone is rapidly on the increase in America. Chloroform is being less and less commonly seen and very dilute solutions of cocain seem to meet with most general approval in local work. However, it must be kept in mind, that morphine, ethyl chloride, scopolamin and other drugs do, in certain hands, and for certain cases, furnish valuable aids to general anesthesia. The article by Mueller on the influence of various anesthetic gases on the internal organs must command the attention of serious readers. He states that the blood pressure is lowered by chloroform decidedly less when oxygen is administered at the same time. The bad effect upon the heart muscle is also diminished thereby. However, this does not help much when the narcosis must be repeated at frequent intervals. The mixture of oxygen and ether does

not lower the blood pressure, while the effect of ether upon the internal organs is diminished when oxygen is mixed with it.

Some striking new thoughts are suggested by Pringle, Maunsell and Pringle in their work on ether as it affects the kidneys. They find that these organs excrete only about 4 per cent. of the normal quantity while the patient is under the influence of the drug, and only about 2 per cent. of the normal quantity of urea is found at this time. What is worse, this diminution seems to increase progressively with the duration of the anesthesia.

An instructive article on acidurea as a cause of death from chloroform and ether, is that of Guthrie who finds the source of the acetone in the urine in a decomposition of the fats of the body. Thus it happens that extensive fatty infiltration of the liver is seen in patients who have died from these drugs. In order to minimize the dangers attendant upon their administration the author calls attention to the following points,—the digestive disturbances, a diet free from fat, the avoidance of anger and fear, both of which cause acetone urea and the treatment of the condition with bicarbonate of soda.

Mention must be made of Mueller's article on fatty metamorphosis in the parenchymatous organs after mixed narcosis. He used almost every drug that can be thought of, and the results which deserve a review will be highly appreciated, if read in the original.

A new anesthetic called stovain is advocated by Cernezzi. It is claimed to be about one-third as poisonous as cocain and to work in much the same way. Its value is increased by mixing it with andrenalin. It can be sterilized by heating, and can be conveniently used in the strength of ½ of 1 per cent. An excellent suggestion is embodied in Seelig's article on Scopolamin-Morphin as an Adjuvant in the Administration of General Anesthetics. With ether, Seelig's method gives a very prompt result, only two or three minutes being consumed before the patient is fully anesthetised. There is no embarrassment of respiration, while post-operative nausea and vomiting are reduced to a minimum.

Some striking new thoughts are to be found in Roehricht's work on glycosuria after ether narcosis. We knew very well this phenomena complicated the administration of choloroform, but this author shows us that sugar to the amount of 1 per cent. can be excreted when ether is used. He examined the urine of 53 patients to get at this interesting result. Bowdine makes a plea for the use of local anesthesia in all operations for inguinal hernia, basing the same upon this usage in 300 cases.

Surgery of the blood vessels has steadily advanced during 1905. Carrell, now connected with the University of Chicago, has done the

most astonishing things with very small vessels. For instance he makes end to end sutures of the thyroid in a small dog, and performs other feats equally surprising. He has, by means of vessel sutures, succeeded in transplanting hearts, and keeping the animal alive for a considerable period of time.

Currie relates a case in which he did trans-peritoneal ligation of the external iliac for aneurism, with complete cure. He was able to collect only eight similar cases from the entire literature on this subject, and considers that it is the route of the future to these lesions. A seemingly excellent suggestion is made by Mueller for stopping hemorrhage by cotton packs which have been soaked in adrenalin. These have, in his practice, been especially valuable in hemorrhage from mucous membranes, ulcers, etc.

The Influence of Adrenalin, Spermin, etc., on the Circulation, is the title of an article by Baum, who has experimented considerably along this line. He considers that these should be used only on normal tissue, on account of the fact that an excessive hyperaemia follows their use upon inflamed and otherwise diseased tissues. Spermin acts directly antagonistic to adrenalin by increasing the rapidity of the circulation and at the same time by dilating the vessels.

It is interesting to read what Boddeart has written about experimental venous edema. He considers that the ligation of the contiguous lymphatics plays a great role in this matter, when we have been accustomed to consider it due to the obstruction of a vein lying between them. Collaterals are so rich in number that it really makes very little difference when we ligate large veins alone. However, if this ligation leads to extensive thrombosis, then of course the matter is different because collaterals may become blocked at the same time.

Mention must be made of Faure's description of a case in which he operated for popliteal anuerism. He completely excised the sac after ligating the supply above and below. Gangrene set in and amputation was necessitated. He thinks that the articular branches to the knee joint got caught in the ligature thus preventing collateral circulation forming, but at the same time he admits that the use of rubber constriction may have had something to do with the matter. An instructive article by Mendes relates the histories of two patients in whom he excised carotid aneurisms. He says that firm adhesions around these sacs are to be expected only in very old cases. He does not seem to fear brain complications as much as one might expect, saying that they are very likely to be transient and to do the patient absolutely no permanent harm.

Some of the existing theories on ligation of the aorta were shattered by the work of Katzenstein, to which mention has been made

higher up. He not only proves that the operation can never do any good in any pathological condition whatever, but brings out clearly the dangers which must invariably attend it. It is interesting to note that one of the many patients on whom it has been performed since it was first introduced by Sir Astley Cooper, almost a century ago, lived forty days. New light is thrown upon ligation of the internal jugular vein by Dengel who relates a case from the clinic of Garre. The operation was for malignant disease of the veins, and both of these large vessels were tied. There was very little disturbance of the circulation as strange as this may seem, the vertebral veins having taken up the work of the others, and in addition to this collaterals having formed around the foramen magnum. As one might readily expect under the circumstances, these veins were found to have already been very much impinged upon by the growth.

The surgery of the nervous system has received a greater impetus by the surgeon, Harvey Cushing, than by that of any other individual operator during the past twelve months. The advanced work which this author is doing will be referred to lower down in the chapter on this subject. Some striking thoughts are to be had from Perthes who wrote concerning the regeneration of nerves after their extirpation for tri-facial neuralgia. He drew out the infra-orbital nerves of animals and plugged the canal with gold. Seven months later it was found that the ends of the divided structure had been successfully held apart, hence he advises this as a practicable and rational idea for surgeons to follow. The article of Woelfler on suture of the hypoglossal nerve cannot fail to be of interest. This operation was carried out four and one-half months after an attempt at murder by cutting the throat had been made. Six months later the movements of the tongue and speech were greatly improved. It is claimed by the author that this is the first case of the kind, although others in which the nerves had been injured but where no attempt at repair was made are reported.

Frazier described a patient from whom he had removed almost one entire hemisphere of the cerebellum. This was necessitated by a recurrence of a malignant tumor, three operations being done in all. There was apparently no immediate or remote disturbance from so extensive an operation, the patients sometimes being greatly improved after each of these decidedly major procedures.

Influence upon the Pulse in Peritonitis, is the title of a paper by Strehl, who has done much experimenting along this line. He removed the cœliac and superior mesenteric ganglia from twenty-two cats and came to several interesting conclusions. There was proneness to intestinal disturbance, with loss of weight and strength, and he considers that the removal of the ganglion first mentioned merely hastens the

emptying of the bowels and causes a dilation of the blood vessels. The amount of information contained in the article can only be adequately judged by a reading of the same in the original. It is interesting to read some of the extracts from Hutchinson's recent volume upon the surgical treatment of facial neuralgia. He says that there is on record but one case in which this disease was cured spontaneously. Microscopic examination of the ganglion and its branches reveals practically nothing abnormal. As long as only one branch is affected the author does an extra-cranial resection; where more than one branch is affected and an extirpation of the ganglion is deemed wise, he protects the portion of it from which the first branch arises, thus differing very much in his opinion from American authorities, most of whom, including Harvey Cushing, deem such a procedure of very little value, total extirpation being deemed necessary in such cases.

Mention must be made of Lange's contribution to the treatment of sciatica. He injects eucain directly into the nerve trunk at the point where it emerges from the pelvis and sometimes repeats this in a few days. He found that it worked like a charm in five cases. He does not consider that the effect is due so much to the specific action of the drug used, but rather to the spreading and general mechanical disturbance of the nerve fibers, so that the mechanical result accomplished is rather similar to that brought about in stretching of these nerves.

Many brilliant new ideas are suggested by Cushing's article on the special field of neurological surgery, which appeared last March. It is undoubtedly the most comprehensive one of its kind which we possess. He gives a general review of the surgical procedures which have been considered adapted to nervous diseases, and makes mention of methods which have originated with him. He is far more hopeful than some of the older authorities on the subject of brain tumors, and lays due stress upon the much neglected palliative operations which are practicable in such cases. He does his decompression operations low down on the temporal muscle and accomplishes the desired result, that is he gets the hernia without the undesirable fungus. He has saved new-born babies, the subject of intracranial hemorrhage at delivery, and hopes that the ordinary form of cerebral apoplexy may be influenced in the future. He uses ether instead of chloroform and advises dividing the spinal cord above an inoperable cord tumor, in order to save the patient suffering. A reading of this paper in the original is absolutely necessary, as no review can hope to cover material so extensively treated. The same author presented, in five numbers of the *Journal of the American Medical Association*, the most exhaustive monograph which has appeared in America on surgical aspects of major neuralgia of the trigeminal nerve. He reported twenty cases

in which he had done the operation, which bears his name, for removal of the Gasserian ganglion. Only one of twenty-three patients who had been operated upon at the Johns Hopkins hospital, where this method has been strictly followed, has died, which is in itself a sufficient attest to the value of the method. The post-operative results as far as nerve disturbances are concerned have been studied with the greatest care by Cushing and are given due consideration here. The eyeball had to be enucleated twice in this series, but the patients seemed to consider the operation more than justified in view of the relief which was afforded.

New light is thrown upon nerve suture by the report of Chaput that he performed this operation fourteen years after the ulnar nerve had been severed. The patient had atrophy and anesthesia in the regions involved. Two weeks after the operation the latter symptom had disappeared and motion had commenced to return. There has been steady improvement ever since and the seemingly impossible has apparently been accomplished.

Existing theories on the treatment of purulent meningitis are given somewhat of a shock by Kuemmell in the work recently done by him on the operative treatment of the same. As a result of his experience, he goes so far as to avoid the idea that the future treatment of epidemic meningitis will be surgical. He has cured cases which were sufficiently general after a local exciting cause to lead him to hope for the realization of an improvement in the statistics on this subject.

The article by Furet on the surgical treatment of facial paralysis states that operations for this malady have been performed twenty-five times since this was first attempted in 1895 by Ballance. Seven times the hypoglossus was used for suturing the peripheral portion of the facial and in the rest of the cases the special accessory. Six times there was no result. In the rest of the attempts there were all degrees of improvement from very slight to perfect.

Schifone presents a paper on the effect of resections of a large portion of the skull and dura upon the structure and function of the brain. He operated on thirty-two animals and came to the conclusion that bone is never reconstructed over a large defect in these two structures. All losses of substance in the cortex are supplied by a new growth of neuroglia. There is very little likelihood of cerebral hernia unless there has been an increase in intracerebral tension, or an infection has taken place.

In considering the surgery of the face, we must not fail to mention an interesting case reported by Watts, in which a horse bit off the entire lower lip of a man. The defect was supplied by dissecting a flap with pedicle from the forearm, and cutting through the pedicle

at the expiration of four weeks. During this time the patient's arm was held in a plaster cast in the proper position, and the result was altogether satisfactory as far as appearance and function went. An excellent suggestion comes from Matas for the treatment of fracture of the lower jaw. The New Orleans surgeon proposes a detachable metallic interdental splint with an external support. This is constructed of tin and is a plate which fits on the lower teeth, firmly fastened to another which supports the jaw. There is no pain, the patient can eat and drink as usual, and Matas gives most favorable results from six cases so treated.

Fracture of the base of the skull is quite exhaustively treated by Walton, after examining the skulls of fifty individuals who died as a result of this lesion. He says that the usual direction of the violence is horizontal and directed against the anterior, posterior or lateral aspect of the skull. He considers a fixed pupil as indicative of a very bad prognosis and states that the reflexes are usually increased, due to a rupture of cerebral fibers, which frees the spinal centers from all control.

It is interesting to note what Routier writes concerning enchondroma of the tongue. This is an extremely rare malady, and in the case noted increased during four years to a very considerable size. A definite diagnosis could be made only after excision of the same. The plastic work on the tongue in this case healed perfectly, though the same is too recent for any definite conclusion as to cure. Mention must be made of a case reported by Kacosi in which the entire face was torn away. The patient, a woman, was on a small step-ladder lighting a street lamp, when the ladder, which was standing upon an icy pavement, slipped from under her and her chin was caught upon a hook, with the result that the weight of her body tore the face mask away. The bleeding veins were immediately ligated and she was sent into the Heidelberg clinic. Secondary skin grafting made it possible to save her life, though she has to be fed through a tube, and has finally learned to talk so that she can be understood.

An interesting article by Walther gives his views on the treatment of sarcoma of the malar bone and orbit with the x-ray. After two recurrences in one case, the x-ray caused a complete disappearance of the mass, even though it was located at the extreme back of the orbit. This case was presented before the Surgical Society of Paris, France, and will no doubt do something toward renewing our waning hopes in this line. New light is shed by Von Bruns upon the trachea in its relation to struma. He examined 100 cases with the x-ray and finds that it is easily possible to show all of the changes in size and position of this organ, which follow the presence of such tumors. The article

can hardly be appreciated unless the accompanying illustrations are seen, these being so astonishingly plain as to make a perusal of the article well worth while.

Some rather striking ideas are presented by Von Graff in his discussion of operative injuries of the thoracic duct. He found 27 such cases in the literature covering a period of 29 years, and comes to the conclusion that the escape of chyle produces very pronounced digestive disturbances temporarily. He finds that immediate ligation or sutures of the duct are the only ways that this can be at once controlled, and adds that ligation of the duct has no ill effect, since the collaterals are so exceedingly rich in number.

The article by Franck on distending the esophagus with air, in order to remove a foreign body, details a case in which this simple expedient proved successful. The patient had an immense mouthful of meat caught in the above mentioned organ and was unable to expel it in either direction. He was advised to drink the two halves of a Seidlitz powder separately, and then to prevent the escape of gas above by holding the mouth and nose closed. In a moment the obstruction was forced into the stomach.

Pineles presents a highly interesting clinical and experimental contribution on the physiology of the thyroid gland. He noticed that tetany could not be produced by complete removal of these glands as long as the parathyroids were left behind. But, on the other hand, if these last named are removed tetany is at once produced, but without cachexia—at least experiments on cats and dogs turned out this way. He explains the occurrence of tetany in the human by the fact that in operations performed in such a manner the lower poles of the gland on both sides are removed and it is almost impossible to leave the parathyroids behind; hence it may occur even though a considerable portion of the gland remains in situ, namely, the upper segments. Some good suggestions are to be found in the article of Kramer upon the treatment of large foreign bodies in the cervical portion of the esophagus. He describes a case in which it was impossible by ordinary means to regain a set of false teeth which had been swallowed. He commenced a cutting operation, but found that it was utterly unnecessary to open the viscus since with a little pressure exerted on the outside the patient was sufficiently aided so that he was able to expel it by his own effort in coughing. The author does not know of this having been done previously. In the second case he was able to accomplish the dislodgment of a fish bone in a similar manner.

The Formation of Bone in Struma, is the title of an article by Sehrt. He examined 28 goitres and found that 14 of them contained this unexpected substance. It is true, as revealed by the microscope,

that this was bone and not merely an accumulation of lime salts. He thinks that in about 35 per cent. of the calcified goitres true bone can be found if properly looked for.

Worthy of discussion is an investigation of progenitur thyreopriver by Lanz, who has been experimenting for twenty years upon animals of various species to find out how the offspring are influenced by removal of the thyroid gland of the parents. He found that a hen from which the thyroid had been removed laid an egg only 1-10 of the normal weight, and that thyroid feeding would produce a greatly increased number of eggs, up to three times the normal, in fact. Animals which have horns lose them after this gland has been removed, and rapidly grow old. It is interesting to notice that some of the oldest patients operated upon in the early days when we removed the entire thyroid, have been restored to health as a result of thyroid feeding. In this connection it may be added that cretins have been beneficially affected by the same procedure. This article contains a great number of points to which no reference even is possible in a review, and a perusal of the original is warmly recommended. The same author in writing upon cachexia and tetania thyreopriva says that the goats of Switzerland are much less affected by the removal of the thyroid than are those of Holland. The comparison was made in writing of the earlier patients at Berne and Vienna. At the first named clinic myxedema occurred very frequently while in the latter tetany most frequently supervened upon complete removals of the thyroid.

There appeared recently an article by Pfeiffer on intratracheal struma, in which he found that a projection of the gland extended in between the rings of this organ and presented beneath the mucous membrane upon its posterior wall.

The article by Friedheim upon the permanent results of the operative treatment of Basedow's disease, compares the results obtained in a few of the leading European clinics and shows most encouraging progress. Mikulicz lost only one out of eighteen cases, and cured ten. At Kroenlein's clinic two out of 24 died, while 16 were cured. In the hands of Kocher 45 were cured out of 59, and 4 died. On the other hand it has been found that about 12 per cent. of these cases die from the disease directly if left alone.

The surgery of the chest received some striking new thoughts at the hands of Garre. In an article on the suture of wounds of the lungs, he states that 40 per cent. of these cases die if not operated upon in the manner mentioned, but on the other hand, if this is properly done the escape of blood and air into the pleura and the consequent infection may be prevented. He operates in the presence of repeated hemorrhages, or pneumo-thorax. He has treated 12 such cases,

suturing the lung nine times and packing the cavity three times, with nine complete successes.

New ideas in surgery are advanced by Wullstein who proposes to treat certain portions of the digestive tube absolutely outside of the body. He proposes to get around stenosis of the esophagus by bringing as much as possible of its cervical portion out on to the anterior chest wall, while a portion of high intestines is brought up on to the abdominal wall and the free ends united by some sort of plastic. Of course one can think of startling possibilities if work is carried out along these lines.

An instructive article by Parquier details a case of a hypertrophy of the mammary glands. This was double and existed with gradual increase for eighteen months. Both breasts were removed, the right one weighing 26 lbs. and the left 20 lbs. The microscopic examination showed the overgrowth to be due to the presence of fibrous tissue.

Probably the most original proposition which has lately been made toward elucidating the problems of chest surgery is that of Sauerbruch, whose experimental work in a low pressure cabinet is already well known. This author, by partially exhausting the air from a closed chamber in which he works succeeds in opening both pleural cavities at once and doing almost anything he desires with the contained viscera without seriously interfering with the animal's health. This opens up a world of new possibilities, and in order that the technique and rationale of this work may be understood it is absolutely necessary that the article be read in the original.

Mention must be made of Keen's article on massage of the heart for chloroform callapse. He had two personal experiences, one of his patients living, and reports 25 similar instances in which three additional lives were saved.

It is both interesting and instructive to read what Faure wrote on the surgery of the posterior mediastinum, its past and future. All of the earlier operations on that part of the body resulted in failure because sufficient access to the parts within was not gained. The author proposes a method of accomplishing this, which differs from others simply in the fact that the first rib as well as those below it are divided, this allowing the surgeon to swing the shoulder as far outward as he pleases. No drain should be used in such cases; if it is, the patient will gradually pump this space full of air and compress his lungs enough to suffocate himself.

One of the most exhaustive and interesting articles of modern times is that by Madelung on post operative prolapse of abdominal viscera. He finds that this has occurred in spite of every variety of abdominal closure where drains were left as well as where they were

not used. It has occurred after the use of every kind of suture material, both in patients who were allowed to get up early and those who were not, and surprising to note, it has been as late as the 17th day after the operation. He collected 144 cases of this kind, and chronicles so many interesting and instructive facts that the article must be read in the original to gain any conception of its value. Coughing and intestinal distention seem to have been the two factors most generally harmful, although the accident has happened in the absence of both of these. The patients, many of them, did well after the viscera were returned to the abdominal cavity, and indeed a number of those lived where no reposition was possible, and in these the intestines gradually withdrew of their own acord into the cavity and the wound healed so solidly that in some no hernia ensued.

Food for thought is contained in Robson's dissertation on inflammatory affections of the pancreas. He calls our attention to the frequency with which pancreatitis is associated with mumps, and states that the most common cause of inflammation of this organ is to be sought for in gall stone disease. He gave the results of ten cases and states that only 8 out of 62 patients suffering from chronic catarrh of the pancreas died as a result of operation. Thorough drainage of the biliary and pancreatic ducts is the treatment indicated under the circumstances. An unusual case is described by Garre. A man was caught between the buffers of two railway cars and in consequence the pancreas was torn in two at about the middle. Four and a half hours after the injury a large quantity of blood was found in the abdominal cavity and in order to stop the flow the two halves of the organ were united by deep through and through sutures. On top of the suture line gauze was packed and in a short time the patient made a satisfactory recovery, this being the only case of its kind on record.

Wm. J. Mayo detailed the immense experience of the Rochester clinic on surgical tuberculosis in the abdominal cavity. He found as a result of his work, embracing 144 operations for this one cause alone, that very many patients recovered from peritoneal tuberculosis only when the primary cause was removed. In their early work the Mayo Brothers did not look for the primary cause but contented themselves with simply opening the cavity as others were doing and draining it. After this had been repeated several times on the same patients, in many instances they found that by removing the fallopian tubes, or tuberculous appendix, that the fluid no longer reaccumulated. To show that this reasoning is rational as to the cause of the disease, one has but to mention the fact that it was found much more frequently in the female than in the male. This article, which is the most exhaustive

that has appeared on this subject, will more than repay a reading in the original.

Worthy of discussion is an article by Clairmont and Ranzi on the treatment of diffuse suppurative peritonitis. This article embodies the results of more than three years' work in the first surgical clinic of Vienna. Emphasis is laid upon the value of flushing with large quantities of salt solution. Gauze drainage is used extensively, as are many other ideas which have long since been given up in American clinics, which can show far better results than those detailed in this article.

Kausch advances the idea that serious dilatation of the stomach without some form or variety of stenosis of the pylorus is impossible; at least he found it to be the fact after carefully examining the immense material of the Breslau clinic. Spasm of the bowels gives a very mild dilation as compared with that of organic stenosis.

An excellent suggestion is advanced by Brunner for the treatment of the stump of the duodenum after resection of the pylorus. He brings the stump up to the parietal peritoneum and anchors it there, unless it happens to be particularly easy to close the same in the ordinary manner. He has never lost a case from a failure of this method, whereas he finds in literature quite a number of fatal cases in the hands of the very best surgeons who have taken care of the stump in the ordinary way.

The pathology of Cancer of the Stomach, is the title of an article by Von Tabora, in which he states that a very important diagnostic sign of this malady has been found by him to be the presence of blood clots about as large as the head of a pin in the stomach washings long before any other symptoms of the disease manifest themselves.

It is very interesting to read Brandt's article on the Marwedel gastrostomy. He says there is no possibility of any such thing as an artificial sphincter forming after this or any similar operation has been done. He considers such a fistula is prevented from leaking simply by the elasticity of surrounding tissues whereas muscles certainly do not come into play at all. Of all the methods which have been proposed he recommends above all others the one mentioned at the beginning of this article, because it is simply sure to hold and requires comparatively but a small portion of the stomach wall for its performance.

Mention must be made of Manry's scheme in displacing the Magraw ligature and using in its stead a triangular stitch of silk, which is intended to cut a three-cornered opening between the stomach and intestines. The technique must be read in the original to be fully appreciated, as illustrations accompany it. The idea is unfavorably discussed by German authors although there seems to be no good reason why it should not be thoroughly successful.

An instructive article on the operative treatment of chronic gastric ulcers appeared from the pen of Jedlicka. He is strongly in favor of excision of the pylorus. In more than one-fourth of the cases which were so treated in Maydl's clinic cancer was found to be beginning. On the other hand mortality in this last mentioned malady is much higher than in the other, consequently it appears reasonable to urge this as good grounds for resection, especially when we consider that the per cent. of permanent cure of cancer is relatively small as yet. In the cases mentioned the stomach was opened and examined from within. In writing on this same subject Krogius mentions the fact that many patients have died of hemorrhage and perforation after a palliative operation has been done. In consequenec of this he, too, is decidedly in favor of resection in these cases where no distinct contraindication exists. He regards the danger of leaving an open ulcer behind as far greater than the danger which accompanies its removal.

So it will be noticed that the tendency of the year has been rather toward the general adoption of the operation which goes by the name of Rodman, in this country at least.

Decidedly the most important article of the year on gastro-enterostomy is that by Wm. J. Mayo, which was read at the meeting of the American Surgical Association in July, 1905. He reports 500 cases in the concise though exhaustive way characteristic of him, and as a result of his last experience voices the opinion that a properly made gastro-enterostomy is to be regarded as the operation most usually applicable for benign disease of the stomach. There are, however, selected cases in which the Finney operation must remain the procedure of choice. Dr. Mayo now does his gastro-enterostomies without a loop, as low down as possible upon the posterior wall of the stomach using the rubber covered clamp as advanced by Moynihan and doing a suture operation of two rows, the inner being of catgut and the other of silk or linen. The many exact details contained in this paper, as well as its illustrative drawings make the reading of it in the original absolutely imperative for the serious student of gastric surgery.

Existing theories on the harmlessness of dumping the stomach contents into the small intestines received a shock at the hands of Tiegel, in his article on peptic ulcer of the jejunum after such a procedure. He writes from the clinic of the late Professor Mikulicz, where so much of this work was done. With the characteristic thickness which marks some German writers, he fails to notice the literature of any but his own language, thereby limiting sadly the value of his article. Mayo-Robson and W. J. Mayo are not mentioned, to the discredit of German surgery. This condition was observed much more frequently following the anterior than the posterior operation. In one

case the symptoms appeared in eight days, and in another not until eight years had elapsed. The lesion is in all respects similar to the same thing in the stomach and duodenum and a diagnosis is difficult. If acute perforative symptoms manifest themselves very soon after an anterior operation we must note them by this complication.

New light is thrown upon the subject of duodenal ulcer by W. J. Mayo in a report of 58 personal cases. In his opinion gastro-enterostomy meets the condition completely by draining and protecting the affected area, the gastric juices being diverted from it thereby. In the paper mentioned Dr. Mayo had not yet fully settled in his own mind the best technique to be used.

Some striking thoughts are presented by Gould, who made a large number of experiments upon animals to determine the worth of a gastro-enterostomy. He did much toward establishing general knowledge of the fact that the stomach cannot be treated like an inert bag, and showed experimentally that its contents will not fall through an opening no matter what its size at the greater curvature so long as the pylorus is open. While we are perfectly ready to grant the importance of experimental work still it cannot be applied without reserve to the human subject, as Dr. Gould has done to a certain extent. He proposes a new technique, but a review is scarcely sufficient to make it clear.

Entirely original suggestions on gastro-anastomosis between the stomach and esophagus are offered by Sauerbruch, the author whose partial vacuum surgery of the chest has been mentioned in detail above. He suggests that half of a Murphy button be inserted through the mouth into any desired point of the esophagus within the chest and that the other end of the button be placed in the stomach, drawn through a slit in the diaphragm and the two halves pressed together while the thoracic cavity is open, thus making a new opening between these two viscera a very simple affair. Of course this can only be done by operating within the author's well known cabinet.

The article by Kelling on resection of the cancerous stomach details 54 cases and states that ascites is an absolute contra-indication of this operation. He says that in every such case the rectum and ovaries should be examined with scrupulous care for secondary deposits. Acid in the stomach contents, no matter what agent causes this reaction furnishes a good protection against infections of the peritoneum, since the germs which occur in alkaline contents are much more virulent. Some of the author's procedures have been so complicated as to seem almost ludicrous, and it may be stated that in carrying out one of his unique suggestions he lost five cases in succession. However, this remark is not meant to detract from a really excellent article.

There appeared recently an article by von Cackovic which contains some pertinent suggestions on the persistent reflex of bile after gastro-enterostomy. In 160 cases this occurred in about two-thirds where the anterior operation was done, and in only about one-third where the posterior method was used. The author ascribes it to an open pylorus, since in the cases where he reoperated and closed the pylorus this manifestation ceased immediately although it did not in the other cases that were reoperated without this being done.

Worthy of note is McLeod's case of foreign bodies in the stomach. He found an abscess in the anterior abdominal wall, and on opening and exploring the same discovered that it led directly into the stomach, which contained an immense collection of small articles, there being among them hairpins, safety pins, needles, screws, tacks, pieces of glass and chalk, coins and other foreign articles too numerous to mention. The walls of the viscus had become exceedingly thick, and though no apparent harm resulted from removing these unwonted articles the patient ultimately died from leakage from the gastric fistula.

W. J. Mayo's article on chronic ulcer of the stomach and first portion of the duodenum astonishes the reader by bringing the intelligence that 231 of these cases were operated upon at Rochester in the last two and a half years alone. The fact is brought out in no uncertain way that nothing is to be expected from operations done for gastric neuroses, or upon subjects of atonic dilation merely. The Mayos do not operate for an acute ulcer unless complicated by perforation, hemorrhage, etc.; but it is in the chronic cases that the greatest good is to be done. Dr. Mayo very rightly states that gastric surgery is only about five years old, and the best of it not more than two years old. The mortality at Rochester has been less than 3 per cent. in the last 150 of these cases. It is interesting to note that these patients came from 26 states and Canada. The technique as practiced by them has been described higher up in this section.

Many excellent suggestions are to be found in Mayo Robson's thesis on the surgical treatment of non cancerous affections of the stomach. In almost 500 operations he has had a mortality of only about 3½, and states that there should be no vomiting or other complications, if the operation is properly performed. Surgery is only thoroughly satisfactory in these cases, as Wm. J. Mayo also has urged where stenosis of the pylorus is presented. It is not necessary to look for a bleeding point or to excise the ulcer as gastro-enterostomy almost always cured such cases. Mortality in these cases is about 25 per cent. where no operation is done, and the suggestions of this, the

greatest English authority on the subject, corresponds almost to the letter with what their own past experience taught the Mayos with regard to the best methods to pursue.

The Magraw ligature is treated by Ochsner in a particularly interesting and instructive manner. He has used it 156 times and seems particularly pleased and satisfied with the results. It shortens the time of operation, any size opening can be made and the peritoneum is in no danger of being soiled. In order to be able to emulate Dr. Ochsner's example in this matter, his article must be read and the technique fully understood before a few failures from a ligature improperly placed should be urged in criticism of the method.

The surgery of the biliary passages will never cease to be interesting as long as gall-stone disease is prevalent. The mechanical treatment of the same in surgery has reached such a high state of perfection at the hands of various American, English and German surgeons that there seems to be little further room for advance in this line. However, other diseases of the liver and its vicinity are constantly demanding surgical attention more and more, and they, as well as gall stone disease must be seriously considered in any review of the past year's work.

Dr. John C. Munro brought out the most exhaustive article which was published during 1905, on lymphatic and hepatic infections secondary to appendicitis. It is lengthy, and goes so much into detail that a critical review in the limited space allowed here is hardly possible. He has noted that it is the milder and more latent forms of appendicitis which lead to the most serious liver changes, and avers that abscesses under the diaphragm are almost sure to infect the pleura at the same time. The article takes up in all their minute particulars the causes, symptoms and treatment of these diseases, and can not fail to be instructive to the abdominal surgeon. The average case of appendicitis is not characterized by an unusually high temperature, hence, where this exists one of these complications must be looked for. As to the symptoms, jaundice may be present, chills, pains, vomiting, diarrhoea and great sensitiveness may be expected. The shortest route to the diseased focus is to be chosen, no matter just what this may be in the individual case.

A wonderfully clever suggestion for the closure of wounds in the liver is to be found in an article by Pahr and Martina. They inserted heavy catgut sutures through the liver substance and tied them over perforated magnesium plates which are placed just external to the edges of the wound, in such a way as to completely close the vessels in the edges of the defect. In the course of time, both the threads and

the plates are absorbed and consequently no foreign substance is left behind.

Experimental ligation of the hepatic artery by Haberer shows that in animals at least no very serious changes of the liver take place in consequence, on account of rich collateral blood supply, and he found that after this procedure had been carried out he could perform most extensive resections of liver tissue without the bleeding which commonly characterizes the same.

It is interesting to read Quenu's contribution to the surgery of the biliary passages. He made an artificial opening between the common duct and the stomach, and on the second day the patient vomited bile, showing that the new opening was patulous. Shortly after this, the patient died of pneumonia and the autopsy showed that there was no leak, or in other words, that the mechanical work had been perfect.

Mention must be made of Bain's experimental contribution to the treatment of gall-stone disease. He found that gall-stones implanted in a normal gallbladder were absorbed in eight or nine weeks. On the other hand, they remained practically intact in an involved gall bladder, and in this latter could not be influenced by any form of medication. He therefore considers it our duty in these cases to look for a remedy which will render the human gall bladder aseptic, and thus lead to the spontaneous resorption of the gall-stones. Owing to the paucity of data regarding the contractile force of the gall bladder, we must welcome the article by Freese. He found that by stimulating its motor nerves contractions could be induced which would cause an internal pressure which was only slightly in excess of the pressure of biliary excretion. The gall bladder has contractor and dilator nerves which arise from the splanchnic.

New suggestions for treatment of the biliary passages are given us by Kehr. He made a complete resection of the common duct for stricture, and succeeded in safely suturing together the two ends of the same. In true German style he left the threads hanging out of the wound, and he says that they came away two weeks later.

Some striking new thoughts are presented by W. J. Mayo, in his article entitled Some Remarks on Causes Involving Operative Loss of Continuity of the Common Bile Duct. He had seven of these cases in his first eleven hundred gall-stone operations, and in the one case to which most prominence is given in this paper, he anastomosed the hepatic duct directly into the duodenum with two rows of sutures. There was no leak at all, and the patient was discharged from the hospital perfectly cured, which certainly goes to show that an exper-

ienced surgeon finds practically nothing impossible when dealing with these structures.

The article by Patel on A New Treatment for Biliary Fistulæ contains the simple yet effective suggestion that these patients may be cured where the trouble is not due to an obstruction of the common duct, by simply feeding them at frequent intervals during the day and night as well. In this way a continual flood of bile into the intestines, is stimulated, and naturally, since nothing is disposed to come out of the fistula, the latter closes rapidly and satisfactorily.

The subject of appendicitis is old yet ever with us, hence although it may be well termed hackneyed, cannot be passed over in silence as long as there is anything at all new or advanced being done along this line. There appeared recently an article by Lockwood on The Relationship between Colitis and Appendicitis, which furnishes some food for thought out of the ordinary. He states that the former condition sometimes accompanies the latter, and may be the direct result of it, and does not disappear until the small offender has been removed. On the other hand, there are cases in which the bowel symptoms are in the foreground for years before the appendix disease is recognized and treated.

Worthy mention are Fraenkel's studies on the blood vessels of the appendix. He injected these, both normal and diseased organs, with mercury, and then took x-ray pictures of them. He found that there was a rich supply of blood vessels in this region, and that the artery of the appendix possessed a large number of collaterals, and is in many instances, not the only vessel which supplies blood to this little organ. Indeed, the middle portion of the latter receives its supply through a special branch from the ileo-colic. Three articles on the treatment of the stump in appendicitis, are worthy of note. The first of these by Seelig, shows that it is safe to ligate the little organ, cut it off, touch it with carbolic acid, and drop it back into the healthy abdominal cavity. The second, by McLean, mentions doing something similar, and then putting a catgut purse-string over the stump, but this is shown by Corruin to have caused death in one case at least, in which the catgut was absorbed too soon, allowing the stump to become everted, and set up a peritonitis, which resulted in the way just stated.

Bernays, in an article entitled The Expectant Treatment of Appendicitis, an excursion into the field between surgery and medicine, refuses to be bound by traditions regarding the necessity or even desirability of placing the bowel at rest in appendicitis. He gives reasons based on success in his own experience for his belief that a big dose of salts is far better than a dose of opium, and this, whether the patient

is to be operated upon or not. Of course he, like other advanced American surgeons, believes that an early operation should be done in most if not all cases, but he will, under no circumstances, hear to the opium splint.

An excellent report of an interesting case is given by Kaufmann, who saw a gastro-enterostomy opening close secondarily, and a gastro-colic and jejuno-colic fistula form as a result of peptic ulcer. A second operation demonstrated the secondary condition, and six days after this the patient died. It is interesting to know that fecal vomiting was very rare in spite of this anatomical condition, which one might have considered as predisposing to it. Typhoid perforation will furnish us a subject of discussion until sanitary science has eliminated this disease from the number of maladies which afflict the human race. Taylor states that fifteen thousand people die of this accident in the United States every year, and further, that the half of them could be saved if an early diagnosis and an early operation were done. In this connection it is astonishing to note that no more than three hundred and fifty-two such operations had been reported from the surgery of all time up to 1903. The conclusion is self-evident.

It is interesting to read Schloeffer's paper on stricture of the bowel after interruption of the mesenteric blood-supply. In animals that survived the operation, it was noticed that a second ulcer and secondarily a circular scar developed, which latter constricted the bowel. Therefore the author was lead to believe that the crushing of the mesentery in incarcerated hernia is of great importance as a causal factor in the intestinal stricture, which frequently develops after the apparently healthy bowel is returned to the abdominal cavity, and the patient has made a good recovery from the procedure. The point is too interesting to be lightly passed over. Mention must be made of the passage of a tooth-plate from the alimentary canal, which is reported by Elmer. This object remained 3½ years low down in the esophagus; was finally swallowed, and half-year later, was discharged through the anus. It seems almost incredible that anything of this kind could occur, with so large an object.

A valuable suggestive article by Harris calls attention to the dangers from the indiscriminate use of cathartics in acute intestinal conditions. These can do no possible good, because we are not called upon to treat the abstract condition of the bowels not moving, but to treat the cause which prevents the natural act, and by hammering away with cathartics, we simply overload the distended viscera, add to the danger of perforation, and reduce the patient's strength, as well as cause additional pain and shock.

Existing theories on the surgery of the large intestines will have to be revised, or at least modified, if Pantaleoni's experience is to be adopted in general use. He reports four cases of resection, which he successfully treated with end to end, and with end to side anastomosis. All of these were successful, which certainly is as good as has ever been obtained by the method at two or three sittings, and certainly far more desirable for the patient. Absolutely new light was thrown upon the surgical anatomy of the small intestines by Monks. This author determined by actual measurements, many new and interesting things about the length, size, location and disposition of the various portions of the intestinal tract. He was able to show, by his experiments, why it is that only a single coil of the bowel can be emptied at one time upon the operating table. He came to several other conclusions which will be of benefit to the surgeon, and the article is most warmly recommended for perusal in the original.

Hernia has been deemed a fruitful field for new suggestions, and one by Polya may be considered in passing. This author proposes to treat femoral hernia by first suturing together the edges of the ring, and then after cutting across the sartorius muscle at its middle, and turning the triangular flap thus formed inward, suture it inverted to Poupart's ligament, and the fascia lata. He has done it with success on the living, and the ingenious procedure which seems applicable to every case is well illustrated in the original article.

We cannot help being struck by Bainbridge's report of a case of multiple hernia. His patient had six ruptures, and was successfully operated on for all of them at one sitting. At the same time a ventrofixation was done, and the appendix removed. This seems to be about the limit in this line.

The article by Bull and Coley on Fifteen Hundred Operations for the radical cure of hernia in children, is the most extensive thing of its kind that has ever been published in any language, as coming from the same operator. As one might expect, the results were practically ideal, and the leading thought to be learned from their experience, is that children over four years of age, can not be cured by a truss. However, operation is not desirable before that time of life, since there is a chance of spontaneous cure.

Although an article on inguinal hernia has not yet appeared from the pen of Charles H. Mayo, still no chapter on the advances in this line during 1905 can be considered as complete by a man who has seen Dr. Mayo's work, unless his method of doing this operation is at least mentioned. He claims no credit for original procedure; still the observer is struck by many things about the work, which he has not seen

elsewhere. In the first place, in exposing the canal, he opens the aponeurosis high up, and does not go into the external ring at all. Then, in closing the defect, he is careful to interpose the edge of the internal oblique muscle between Poupart's ligament and the upper flap of aponeurosis, in order that blood supply may be furnished by the muscle, and thus a union take place earlier than would otherwise be the case. After this suture line has been completed, he overlaps the other flap of aponeurosis, as Andrews suggested, and by closing the defect in the fat with the same suture, performs an operation which is a marvel of simplicity, neatness and mechanical perfection.

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DIAGNOSIS.

IN CHARGE OF

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The new diagnostic methods brought forward in the course of the past year have been so numerous that it has been found quite impossible adequately to cover the entire field in the compass of a brief article. It has therefore seemed better not to take up methods of physical diagnosis and the like, which if discussed at all must be described *in extenso* and with great detail. Only contributions to laboratory diagnosis will be discussed, and even of these no mention will be made of methods dealing with the diagnosis of gastro-intestinal affections since these will be taken up in the department of Internal Medicine.

URINE. One of the most important contributions to urinology during the year was that made by R. C. Cabot[1] of Boston as the result of the comparison of the post mortem findings and the clinical records at the Massachusetts General Hospital since 1893. He first went over the post-mortem records for twelve years noting the cases in which kidney lesions were found and comparing these findings with the results of urine analyses made during life. He then took the cases in which normal kidneys were found and looked to see whether the clinical records showed a normal urine. His results were astonishing. Both post-mortem diagnosis and urine analysis are beyond criticism at this hospital. Nevertheless the lack of correspondence between the two was striking. Of the 21 cases of acute glomerular nephritis only 5 were diagnosed as nephritis during life and not one was recognized as acute nephritis. Of the 10 cases of subacute glomerular nephritis, 5 were recognized as nephritis of one sort or another and 1 as acute nephritis. The 17 cases of chronic glomerular nephritis gave a better result. Thirteen were correctly diagnosed and in only 2 did the urine fail to indicate the presence of any renal lesion. Chronic interstitial nephritis was recognized in about two-thirds of the cases; in the remaining third the patients were under observation for only a brief period. In none of the 6 cases of amyloid kidney was the diagnosis made during life, though in four of them the diagnosis might perhaps have been made from the clinical findings. In the other 2, however, the diagnosis was not possible. Chronic passive congestion of the kidney can usually be recognized clinically, but only because the other signs supplement the deficiencies of the urinary find-

ings. The same is true of acute degeneration of the kidney such as accompanies many fevers.

Twelve cases were found in which the kidneys were normal post-mortem whereas the urine had shown albumen and casts. Twice the diagnosis of acute nephritis seemed justified and in one of them the patient was thought to be uremic. In 4 cases .25 per cent. or more of albumen was found, while in 6 there were epithelial casts. The urine of all 12 contained hyalin and granular casts. His conclusions are radical. He believes that the vast majority of estimations of urinary solids, including urea, are a waste of time, that the attempt to diagnose the anatomic condition of the kidney by the measurement of albumin and the search for casts is fallacious in the extreme and that the most reliable data about the urine are those most simply and quickly obtained, the twenty-four hour quantity, the specific gravity and the color.

Gentzen[2] obtained similar results. In the urine of 100 healthy individuals the sediment on standing, if then centrifugated, was found to contain hyalin or granular casts in about half the cases. He suggests examining the sediment obtained on standing or by centrifugation but not by the combination of the two methods.

Loeper[3] believes that polyuria is one of the most characteristic symptoms of cerebrospinal meningitis. He has had patients with a temperature of 104 degrees or over who passed from 3 to 4 quarts of urine a day. Only when the intoxication is intense does the polyuria fail to occur. He relies greatly upon this observation in differentiating cerebrospinal meningitis from typhoid fever, grippe and tuberculous meningitis.

The new methods for the rapid estimation of uric acid are numerous out of all proportion to the clinical importance of the results sought to be obtained. Surveyor[4] has devised the following method: Render the urine slightly alkaline by adding tiny drops of strong NaHO—boil it, and take 5 c.cm. of this boiled urine for examination. Add two tiny drops of HCI from a capillary pipette (each drop equals 0.02 c.cm.) stir it well; see that it is quite clear again. Freeze it and centrifugalize till the whole has remelted, and read off the percentage of deposit as soon as the temperature is about 25 degrees C. In case there is much pus or albumen or any other deposit is present, it must be removed by boiling 10 c.cm. of the urine acidulated with a tiny drop of glacial acetic acid, and 5 c.cm. of the filtered urine is to be treated as above.

Dimmock and Branson[5] add to 100 c.c. of urine 1 gram of lithium carbonate, boil for 3 minutes, filter hot and wash the precipitate with a little distilled water until the filtrate measures exactly 100 c.c. To

50 c.c. of the filtrate, which contains uric acid as lithium urate, 5 grams of ammonium chlorid are added, shaking the liquid until dissolved. After three minutes the contents of the flask are warmed to 120 F. so as to secure a uniform aggregation of the precipitated ammonium urate. The whole is now poured into a tube graduated in parts per thousand of uric acid, and deposition allowed to take place, the reading being taken after four hours have elapsed.

Wile[6] has ingeniously modified the turpentine guaiac test for blood in the urine as follows: To equal parts of chloroform and turpentine, tincture of guiac (U. S. P.) is added, a drop at a time, until slight milkiness appears. To one or two cubic centimeters of this reagent the suspected solution is added and the mixture is thoroughly shaken. In the presence of blood the chloroform-turpentine-guaiac solution becomes blue. The color takes a few seconds to manifest itself, but gradually deepens until all the hemoglobin has entered into the reaction. The color then gradually becomes lighter and slowly disappears. This chloroform modification gives a clearly cut reaction, and is more delicate than the simple peroxid of hydrogen and guaiac reaction. The solution, if kept in an amber-colored container, will keep for several days without losing its power to give the reaction. Instead of using tincture of guaiac, a 10 per cent. solution of resin of guaiac in glacial acetic acid may be substituted.

On March 20th, Frommer[7] demonstrated before the Society for Internal Medicine of Berlin a new test for acetone that seems destined to replace those ordinarily used. To 10 c.c. urine, 1 gram of solid potassium hydrate is added. Without waiting for complete solution to occur, add 10 to 12 drops of a 10 per cent. alcoholic solution of salicyl-aldehyde (1 part salicyl-aldehyde to 10 parts absolute alcohol) and warm gently. The alcoholic solution floats upon the heavier lye and at the place of contact there is formed, in the presence of acetone, a dark red ring. The test is exceedingly delicate, showing the presence of one-millionth of a gram of acetone in 8 c.c. of urine. It has practically no source of error since none of the other normal or pathologic constituents of the urine, above all not diacetic acid, will give a positive reaction. It can safely be done with the undistilled urine, in which respect it surpasses Legal's and Lieben's test.

Collo's[8] test for acetone depends upon the property of this substance of being converted into acetic acid by means of oxidation. To 5 c.c. urine add 2 or 3 drops of a 5 per cent. solution of ferrous sulphate, 5 drops of dilute sulphuric acid and a few c.c. peroxide of hydrogen. Warm gently, add 15 to 20 drops concentrated sulphuric acid and warm again. Acetic ether is produced and may be recognized by its characteristic odor. If acetone is present only in traces the urine

must be distilled with dilute sulphuric acid and the distillate used, otherwise the test may be applied to the urine itself.

A useful modification of the usual indican tests has been contributed by Guerber[9]. He substitutes a few dorps of a 1 per cent. osmic acid solution for the calcium hypochlorite. The test is sufficiently delicate and more reliable than those hitherto used, since an excess of osmic acid does no harm.

Maione[10] protests that not sufficient diagnostic use is made of the search for typhoid bacilli in the urine. The recognition of the bacilli under such circumstances is comparatively simple. They often can be found in the second week of the disease and occasionally precede the appearance of the Widal reaction.

Blood. As the result of leucocyte counting in a very great number of individuals, Kjer-Peterson[11] has found that the blood of healthy men is "homogeneous," i. e., that under the same circumstances it always contains approximately the same number of leucocytes. The blood of women, on the contrary, is "non-homogeneous," since even in health the number of leucocytes varies greatly. The leucocyte count would thus be of considerably more diagnostic significance in the former than in the latter.

C. Zeiss in Jena has put on the market a new counting chamber according to the designs of Buerker[12], which obviates many of the faults of the old Thomas-Zeiss instrument. The chief point of difference lies in the fact that the new counting chamber has two capillary grooves in the glass platform upon which the cover-glass rests, one on each side, so that the interior of the chamber communicates with the outer air. The cover glass is first carefully laid on, good Newton's rings being obtained. The diluted blood is then allowed to flow into the chamber through one of the grooves by means of capillary attraction. In one form there is no field engraved upon the central elevation, the count being made by means of an eye-piece micrometer. In the other, more suitable for clinical work, there is a series of engraved squares which however have an area of 9, instead of 1, square millimeters. The advantages are obvious. The cover glass can be more accurately adjusted to the slide; the blood is distributed more uniformly; the counting chamber is independent of barometric pressure; the large counting field makes the estimation of leucocytes more accurate. A large series of careful counts[13] has demonstrated the utility of the new instrument.

A noteworthy contribution to the technique of hemoglobin estimation has been made by Gruetzner[14]. His new hemometer is in general constructed on the lines of Fleischer's instrument. Instead of a

colored glass prism, however, the new hemometer has a hollow prismatic glass container which is to be filled with the blood to be examined, diluted 100 times Near the apex of the prism the blood has thus a very pale color, growing darker as the base is approached. For comparison two gelatine plates stained with piero-carmine are supplied, one having the color of normal blood diluted 100, the other 200 times. The point on the prism at which the diluted blood has the same color as one of the plates indicates its hemoglobin content. The instrument is said to be accurate and easily handled.

Giemsa's[15] modified stain is in some ways superior to his earlier formulas both for blood work and for staining the spirochaeta pallida and other micro-organisms. He recommends: Azure II-eosin 3 grams, azure II 0.8 grams, glycerine and methyl-alcohol each 250 c.c. One drop is added to each c.c. of water and the spreads are stained in this solution 15 to 30 minutes. They may be fixed in methyl-alcohol of 2 or 3 minutes or in a 10 per cent. alcoholic solution of formol for 10 seconds. The stain is said to keep well.

A useful modification of Jenner's stain has been worked out by Tiedemann[16]. To a 1 per cent. solution of methylene blue (Hoechst) in pure methyl-alcohol, add an equal amount of a 1 per cent. solution of eosin (Gruebler) in the same solvent. The mixture is ready for use at once and keeps indefinitely. The blood spreads are stained with this as with Jenner's stain, with which it is practically identical. Its superiority over Jenner's stain lies in the ease of its manufacture and the certainty of its results Like Jenner's stain it is also useful for bacteriologic and other purposes. For malarial blood the following modification is advised.

Take 10 c.c. 1 per cent. solution methylen blue in pure methyl alcohol.
10 c.c., 1 per cent. solution eosin in pure methyl-alcohol.
20 c.c. pure methyl-alcohol.

Add to this one drop aq. ammon. fortior. Place in incubator or carry in inside pocket, for a few days.

Stain one minute, add 5 drops of water, let it act for 3 minutes and wash thoroughly. This produces very nearly the effect of Wright's stain.

Nattan-Larrier and Bergeron[17] have increased the possibility of finding tubercle bacilli in human blood in cases of miliary tuberculosis. They dilute 10 c.c. of blood with 200 c.c. of distilled water. This destroys the red blood corpuscles promptly. The diluted blood is then centrifugated, with or without a preliminary sedimentation, and stained spreads made with the sediment in the usual manner. The bacilli stain well and are more readily found than with other methods.

Exudates. The attempt to diagnose the nature of pathological diseases producing sero-fibrinous exudates by means of the examination of the fluid withdrawn, has attracted considerable attention in the course of the year. One of the routine methods of distinguishing between exudates and transudates has been the estimation of the specific gravity of the fluid. The latter is always distinctly higher in exudates than in transudates. Englaender[18], however, has pointed out that, as usually performed, the determination of the specific gravity of an exudate is subject to a serious source of error The aerometers are almost all graduated so as to be correct at room temperature. If we wait for the warm fluid to cool, it undergoes two changes. The cellular elements sink to the bottom, and the fibrin goes out of solution on account of its coagulation. The aerometer accordingly registers a much lower specific gravity than should be the case. He advises the use of an instrument, constructed according to his directions, which is accurate at 36 degrees C., whereby it becomes possible to take the specific gravity immediately upon the withdrawal of the fluid.

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As regards the value of cyto-diagnosis in exudative pleurisy, N. Kuschew[19] confirms the cytolytic formulae of Widal. In 11 cases of primary tuberculous pleurisy, the exudate contained a great excess of lymphocytes with a greater or smaller number of red blood corpuscles In 4 cases of secondary tuberculous pleurisy, a lymphocytosis was found in the exudate in three cases, whereas the fourth showed an excess of polymorpho-neuclear cells. Six cases of non-tuberculous pleurisy showed an excess of polymorpho-nuclear cells, whereas 3 cases of mechanical transudation showed chiefly endothelial cells. These results indicate the diagnostic importance of a lymphocytosis in the fluid withdrawn, for the diagnosis of a tuberculous affection. Van der Meer[20] on the other hand expresses himself more guardedly. He reports 23 cases carefully observed and concludes that while a tuberculous exudate nearly always contains an excess of lymphocytes, not every lymphocytosis in an exudate indicates a tuberculous lesion. The diagnostic, though perhaps not the pathognomic, significance of such a lymphocytosis seems fairly well established.

However great the diagnostic importance of such a lymphocytosis, the actual finding of tubercle bacilli in the fluid is obviously still more decisive. Unfortunately the difficulty of this examination is quite equal to its value. Vetter[21] advocates the following method. Into a large culture tube is placed a slice of potato 4-5 cm. long. This covered by 8 c.c. of a fluid containing 1 per cent. peptone, ½ per cent. salt and 10 per cent. glycerine. The whole is sterilized. If an equal quantity of a tuberculous exudate is allowed to flow into this culture medium, the tubercle bacilli will form colonies on the potato as well

as in the meshes of fibrin that separate out. By this means he was able to demonstrate the bacilli in 9 out of 10 cases of exudative pleurisy, whereas animal experiment gave a positive result in only 6.

Bacteriology. Of the many advances in the field of bacteriology, which will be discussed in another department, it is above all the improvements in the technique of the Widal reaction that concern the clinician. It has become more and more clear that it is not necessary to work with live cultures of the typhoid bacillus but that perfectly good results can be obtained either with cultures killed by the addition of formalin or with suspensions of comminuted bacilli such as "Ficker's Diagnosticum" prepared by Merck. The latter especially seems to be growing in favor and enables every physician to perform his own agglutination tests. There have recently been put upon the market, by the same firm, similar suspensions of the two kinds of paratyphoid bacilli, so that the practitioner is enabled to make a Widal test in paratyphoid as well as in typhoid fever. The only disadvantage of this method is that a somewhat longer time is necessary for the production of agglutination than with live cultures. On the other hand one has one's reagent always ready. It is moreover becoming steadily more evident that agglutination must take place in higher dilutions of the serum, than has hitherto been customary, in order to justify the diagnosis of typhoid or paratyphoid fever. A positive result in a dilution of less than 1 to 200 should not be considered decisive. To be sure the insistence upon such high dilutions will often make the method fail to give positive results in typhoid fever, especially early in the disease; but on the other hand there will be fewer cases in which an agglugination in a non-typhoid condition leads the observer astray.

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THERAPEUTICS.

IN CHARGE OF

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In the past year two interesting methods have been proposed of solving the problem of immunization against tuberculosis.

Spengler[1] has shown that Behring's method of immunization of cattle against infection with the bovine tubercle bacillus by inoculating them with cultures of human tubercle bacilli, is equally effective, when reversed, for human individuals, and for patients already infected. On investigation he concluded that when inoculation with cultures of the bacilli was performed, the time required for immunization was too great, and therefore employed bovine tuberculin (P. T. O.) He found that injecting into patients tuberculin derived from bovine tubercle bacilli produced very little reaction of any sort, as compared to human tuberculin, and that they produce a much higher power of agglutination in the blood serum of individuals so treated than that obtained with the human tuberculin. He used the agglutinating power of the serum as an index of the degree of immunity or resistance produced. During such treatment the number of bacilli in the sputum rapidly decreased, the general symptoms improved. He makes no report as to the final results in any given case, but regards the method he proposes as efficient in increasing the resistance toward the disease of idnividuals already infected, and as a vaccine against the disease in healthy individuals.

The second method is that which has recently been announced by v. Behring[2] at the International Tuberculosis Congress at Paris. This announcement simply presents the reasoning by which v. Behring arrived at his conclusions, and states that no clinical confirmation on human individuals has been attempted. The residue of the tubercle bacillus remaining after successive extractions with water, 10 per cent salt solution, and with alcohol and ether, is a substance which causes, when injected subcutaneously, the formation of tubercles, which become caseous, but do not break down and eventually are absorbed. This substance v. Behring names "T. C." It is harmless and incapable of propagating the disease. v. Behring imagines that this substance is taken up by the cells of the body and there is changed into or gives rise to a second body substance, "T. H." which is the "cause of the sensitiveness of the infected individual to tuberculin, and on the other hand is the cause of curative cell activity in opposi-

tion to the tuberculosis poison." Essentially, therefore, v. Behring has obtained a tuberculin freed from substances which produce injurious toxic effects, which produces a prompt immunity against tuberculosis. What the results of the clinical application of this substance may be, remains to be seen. The reports on the use of Marmorek's tuberculosis antitoxin give conflicting and not very definite results.

The attempts to obtain an effective serum against pneumonia, inaugurated by the Klemperers in 1891, have recently been revived by Roemer of Wuerzburg. He has produced a serum consisting of a mixture of serum obtained from horses, cattle, and sheep which have been immunized against a great number of different strains of the pneumococcus. The new step in this procedure is that a greater variety of specific immune bodies has been provided, which increases the variety of complements to which the serum may be applicable in the blood of the patient immunized as well as the number of strains of pneumococcus with which it may combine. The serum is bactericidal, and not anti-toxic. Paessler,[3] Lindenstrom,[4] and Knauth,[5] reporting thirty-five cases in all, have found an almost invariable reduction of temperature, but most important a great improvement in the circulation. The pulse became fuller and of better tension, the cutaneous circulation better, and in four instances an oedema of the lungs promptly disappeared after an injection of the serum. No change was observed in the pathological process in the lung, in the usual frequency of complications, in the number of leucocytes, or in a hastening of the crisis. No untoward effects were observed. The efficiency of the serum may be summed up in Paessler's words, that while "its action is uncertain and in most instances incomplete, it is still far superior to any other therapeutics means we have which is directed against the infection itself." It may be used particularly in severe infections and should be given early. The general impression of the results obtained is very encouraging. Knauth, furthermore, reports very favorable results in pneumococcus infection of the cornea, which in 80 per cent of the cases yielded, without further local treatment, to subcutaneous injections of the serum.

The intraneural injection of tetanus antitoxin, the experimental proof for which was so well carried out by Meyer and Ransom in 1904, has been further developed, rather boldly it is true, but very logically by Rogers.[6] He proposes the injection of small quantities (10 to 30 minims) of antitoxin directly into the spinal cord, introducing it by means of a needle and syringe, by a method analogous to lumbar puncture. He recognizes the danger of the procedure, and considers it justifiable only in desperate cases. It is an attempt to neutralize the

toxin more quickly than is possible when the antitoxin must travel into the cord from the nerve.

The site of injection depends partly on the point at which the nerves from the locality of the wound enter the spinal cord, and should always be placed above this. The second consideration is the protection of the respiratory center, especially against exhaustion, and for this purpose the injection should be made as near to it as possible, that is into the lower cervical cord. The needle is to be introduced as in lumbar puncture, but should be carried forward through the cord until it strikes the body of the vertebra. It should then be with-drawn a short distance, and the injection slowly made. Rogers has seen no serious subsequent disturbances of nerve function as a result of this. The possible rupture of blood vessels is a question never to be lost sight of.

In the past year the value of Moebius' antithyreoidin in exophthalmic goitre has received very widespread confirmation. It has shown itself to be by far the most successful attempt yet made to produce a serum to combat thyroid intoxication. It is obtained from the blood of sheep drawn six weeks after extirpation of the thyroid. Injected subcutaneously it proved to be entirely without value, and frequently resulted in abscess formation at the point of injection. Given by mouth, however, it has been followed by very encouraging results. Nine cases have been reported in the past year by Thienger[12] Hempel[7], Peters[8], Lorner[9] and Duerig[10]. In one case no improvement occurred. In the remainder there was a reduction of the pulse rate, and an improvement in the general circulation, in the size of the thyroid and its consistency, and improvement in the tremor, in strength, and in the subjective feeling of well being. In most cases this improvement continued only during the administration of the serum or for a short time afterwards. Duerig, however, reports a case in which improvement was maintained for six months, after an administration of the serum for a period of four months preceding.

Christens[13] has used with equally favorable experience the dried, pulverized blood of thyroidectomized sheep, instead of the serum, administrating it by mouth as in the case of Moebius' antithyeoidin. It must be recognized that antithyreoidin and the dried blood as used by Christens are purely symptomatic remedies, and that as far as experience has shown they give only temporary results. Even though temporary these results have, however, justified its use. Aside from occasional nausea and feeling of aversion, it produces no untoward results except when grave circulatory disturbances have made their appearance, especially myocarditis, when it undoubtedly adds to the gravity of the case and is strongly contraindicated. Eulenberg[11] reports seven cases treated with Moebius' antithyreoidium, in five of

which the general condition, at least, was greatly improved. He considers the serum a distinctly helpful palliative measure, but he does not feel justified in letting it replace the dietetic and physical methods of treatment which should be carefully adhered to.

The already rich but inefficient therapeutics of gout has received a promising addition from pharmacology, which is based on the recent studies in the metabolism and physiological chemistry of uric acid. Having shown on experimental evidence that the uric acid in the blood of normal individuals is in all probability combined with thymic acid. Schmoll[14] has demonstrated that in gouty patients two abnormal metabolic processes occur; first, that some of the uric acid in the circulating blood of such individuals does not combine with thymic acid, and is not excreted in the urine, but accumulates in the tissues; and secondly, that in these patients in addition to the uric acid that is formed from the nucleins in the food and the disintegrating body cells as in normal individuals, uric acid is obtained from the paranucleins. The uric acid from this source also remains uncombined with thymic acid and increases the total quantity of uncombined acid, which is not excreted. On this evidence Schmoll administered thymic acid by mouth to thirty cases of gout with excellent results. The quantity of uric acid is uniformly increased above the normal, or the additional quantity to be expected from the quantity of nucleins known to be in the food, and remains so as long as any uncombined acid is present. This period is usually about ten days. The patient feels unusually well, the swelling in the joints decreases, and motion in the affected joints becomes less painful and much more extensive. In the only acute attack treated ahe pain and swelling ddisappeared in six hours. The dose of thymic acid given was three grains four times in twenty-four hours. A larger daily dose usually produces gastric disturbances, and inflammation about the local deposits of uric acid.

The results of the treatment of leukaemia by the Roentgen-ray have been made no more definite than in the foregoing years. A study is necessary of the ultimate out-come of the treatment at longer periods than have heretofore been allowed to elapse. Beyond the changes which occur in the blood, very little attention has been given in published cases to reparative changes in other tissues, and to the return in leukaemia patients to the normal metabolic processes, all of which will be necessary to solve the problem of the nature of the influence of the Roentgen-rays on the disease and to determine accurately the efficacy of the treatment. It undoubtedly gives more prompt results than arsenic, can be more accurately applied than the various injection methods, and is easily administered. It has, however, its dangerous side and is not to be employed indiscriminately. Symptoms of

general intoxication frequently follow its use, presumably due to the rapid production of toxic material as the result of the rapid cell-destruction; such intoxication is frequently accompanied with a serious aggravation of the patient's condition. Secondly, the danger from burns and dermatitis is not insignificant on account of the frequent exposures over a long series of days. Cases of short standing appear to yield much more promptly, and with a better prospect of permanent results than old cases, in which intoxications are more frequent, and which often pursue an uninterrupted downward course. It seems that the treatment in cases which are recognized early may be more effective than it has hitherto been. Nothing has appeared in the past year to alter Dock's[15] statement that "in no case has observation been carried out long enough to speak of cure; in several cases death has occurred while the symptoms seemed to indicate improvement; no stronger claims can be made for it than can be made for arsenic and certain serums and bacterial toxic substances.

Roentgen rays have also been used with good results in one case of Addison's disease[16], which had yielded a positive tuberculin reaction. Both kidney regions were exposed from the anterior surface for short periods in twenty-five successive days. An immediate improvement followed and after a second course of twenty-five exposures the patient was able to return to his former duties.

It may be well to speak of the intravenous methods of administration of several well known drugs, especially sodium salicylate, digitalis and potassium iodide. Sodium salicylate has been used intravenously by Mendel[17] more than two thousand times in cases of rheumatism both acute and chronic, and has given brilliant results. So administered it relieves the pain and effusion into the joints promptly and certainly, serves to differentiate the chronic cases of true rheumatic infection from other forms of arthritis, and is not followed by its usual disagreeable systemic effects. As the method is accompanied by the ordinary risks of intravenous injections, it should be used with a due appreciation of these, and therefore, only in cases which present a lack of tolerance for the drug when given by mouth and in those which do not improve but tend to become chronic. Mendel thinks that if administered under strict aseptic precautions, with care in expelling all air from the syringe, and using a sharp needle, that the risk is reduced to very small proportions. He uses a sterile solution of sodium salicylate 8.75 grams, caffein 1.25 grams, in 50 c. c. of water. Two cubic centimeters form a dose for the adult, but as much as 4 c. c. may be used in severe cases. The injections may be made into any of the larger superficial veins, but usually the median cephalic or basilic vein at or near the elbow is preferable. Brugsch,[18] in repeat-

ing Mendel's work, has in a much smaller number of injections (17 cases) had less satisfactory results, particularly in cases of acute rheumatism.

More recently Mendel[19] has also experimented with digitalis given intravenously. For this purpose a preparation of digitalis must be used which contains no alcohol, and the least possible amount of other irritant substances. The various active principles which have been isolated from digitalis leaves cannot replace a preparation of the crude drug because their action represents only a part of the digitalis effect. The intravenous injection permits an accurate dosage, and produces its effect within a few minutes, in contrast to the incomplete and slow absorption of digitalis from the alimentary tract. Mendel used digitalone in doses of 2 c.c. (equivalent to 0.2 grams of digitalis leaves) at an injection. This dose produces its maximum effect in a few minutes, which then gradually subsides in the course of twenty-four to thirty-six hours. A prolonged effect requires repeated injections at intervals varying from twelve to forty-eight hours as may be demanded in the individual case. As in the case of sodium salicylate, the injections are to be made into the veins at the elbow, under strict aseptic precautions. They are not to be used ordinarily but are indicated when the drug by mouth produces gastro-intestinal irritation, is poorly absorbed, when it is desirable to avoid any gastro-intestinal disturbance, and when a prompt digitalis effect is imperative.

Doevenspeck[20] reports very prompt improvement in cases of intense syphilitic infection following repeated intravenous injections of potassum iodide in doses of 2 c.c. of a 5 per cent. solution (equivalent to 1.5 grains). The indications for its use are grave symptoms which are too slowly influenced by the ordinary methods. The reported cases (four) consisted in (1) excession nocturnal pain, (2) very extensive secondary eruption with ulceration, (3) rapidly progressing tertiary ulceration of bone and mucous membranes, (4) tertiary lues of the nervous system. The injections were repeated daily. Their immediate object, that is, a limitation of the rapid progress of the disease, was attained with one or two injections in 24 to 48 hours. Poisoning or development of an iodide eruption was not observed.

The most serious advance in therapeutics in America— we say this advisedly though, perhaps, not in the usual sense— has undoubtedly been the now very general discussion and agitation against the American evil of nostrum-vending, and quite significantly this piece of investigation has been the layman's research, especially in unearthing the methods and propaganda of the nostrum venders. Full credit and honor are due the *Ladies' Home Journal* and *Collier's Weekly* for their courageous step in publishing the facts. The

American Medical Association and its *Journal* have organized in its Council on Pharmacy and Chemistry an efficient instrument for investigating the multitudinous proprietary medicines. The individual practitioner does not have the facilities or time to investigate the merits and claims advanced for each manufacturer's product, and as there are dishonest and incompetent men engaged in the marketing of pharmaceutical products as in all other fields of human endeavor, the work of this council on pharmacy, properly administered, will render a great service to the profession and to honest pharmacy.

Three series of facts have been brought out by the various investigators. First, the positive demonstration of misrepresentation in regard to the ingredients of many secret remedies; secondly, that some of these products are not even uniform in their composition, the formulæ being changed from time to time, in some instances these changes being so radical as to produce totally different physiological effects, and thirdly, the exposure of the contracts by which the nostrum manufacturers silence the newspapers, through which they compel legislation favorable to themselves.

Of the first series, the most complete knowledge we have is in regard to the alcoholic nostrums and the acetanilid mixtures, many of the latter pretending to be synthetic products. Among the alcoholic nostrums which have heretofore been lauded by temperance workers we may mention Lydia Pinkham's vegetable compound which contains 20 per cent. of alcohol, Paine's celery compound which contains 21 per cent. alcohol, Ayer's sarsaparilla with 26 per cent., Peruna with 28 per cent., Parker's tonic, "purely vegetable," 41 per cent., etc.[21]—all these as compared to the much abused beer with a maximum of five per cent. of alcohol. Those of the acetanilid mixtures which are misrepresented as synthetic products are equally flagrant ethically, but are also more immediately dangerous in that an overdose is more easily reached in point of quantity, and a recognized proportion of individuals present an insurmountable idiosyncracy against the drug, even when it is most cautiously given. But most important is the direct deception which is practiced in the advertisements in which, as in orangeine, an effect is claimed for the remedy which is directly opposed to the true effect, namely that it "strengthens the heart and produces better blood," while it is really a heart depressant and a blood destroyer, and in general the claim of "not dangerous" is false, and mixtures of acetanilid should be plainly marked "poison."

The development and present status of the propaganda of the nostrum venders has been accurately traced in *Collier's Weekly* for November 4th, 1905, which we suggest that every physician read for his own information and for that of his patients. The outcome is that

most of the newspapers of the United States are under the complete control of these people by virtue of a contract which prohibits any adverse criticism, editorially or otherwise, on the part of the newspaper or its contributors, and also serves as a cudgel by which these papers can be made to throw all their influence against adverse legislation in regard to patent medicines. The medical press as a whole has not manifested great enthusiasm in support of the attitude of the American Medical Association and its council on pharmacy and chemistry. We hope this position is not to be construed as an opposition to the movement toward bettering these conditions.

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PATHOLOGY AND BACTERIOLOGY.

IN CHARGE OF

CARL FISCH, M. D.

The purpose of this annual review cannot be the enumeration of the single items contributed during the year to pathological literature. The space would not allow it, nor would any benefit be derived by the reader, who wants to know more about the general development and advance of pathologic problems than of the detailed work that has lead to them or, more often, remains for the present sterile for want of knowledge of how to utilize it toward the solution of greater riddles. The same obtains for bacteriologic literature, that, in its entirety would be tiring, but allows of comprehensive discussion with profit. For that reason my list of references will be curtailed, but sufficient to make easy the access to the sources, if more complete information is desired.

In pathology as well as in bacteriology the past year has brought one important change, and that might be called a negative one. In both of these branches of medical science the judgment has become more sceptic, and enthusiastic hypotheses find less and less applause. In many cases detail work has undermined theories that were not doubted before, with the consequence that while on the one side a void is created, on the other a wide new field of research has been opened, promising in time to replace the lost theory by one more firmly based. This applies especially to bacteriologic problems, and we shall have to deal with some of them.

A great deal of work has been done in experimental pathology, but except certain publications on tumor-experiments, none of it has opened new views or facts. How fruitful the consideration of this work, however, can be for pathology is beautifully shown in a work that ought to be widely known, the "Processus generaux" of Chantemesse and Podwyssotsky[1], as well as in Lubarsche's latest book[2]. Both of these books are unique and outline in a way the problems of pathologic research that excels in clearness everything written before. They form the most important addition to our literature and will make the methods of pathologic research less liable to redund in incoherent and isolated results.

Of all the pathologic problems, the tumor question has held the front rank in importance, and it seems that in some directions at least

a unison of opinion is preparing. This obtains, in the first place for our ideas of the mode of growth of a tumor, or, more specifically, the question: Can normal tissue cells become tumor-cells? There are many that hold to a positive answer, the foremost of them, Hauser[3], who very lately again has emphatically insisted on the direct observation of this process. As is well known Ribbert[4] had shown how many sources of error were necessarily involved in the establishing of this fact, and in many cases, where they could be overcome, he invariably arrived at the result that a transition of normal cells into tumor cells never occurred, that the tumor grows always out of itself and that each of its cells is a derivative of the original tumor cells. His observations were extensively confirmed by Borrmann for skin carcinomata, as reported last year, and since then more attention has been paid to this point in the examination of tumors. In all the cases reported, the attempt to demonstrate such a transition has failed, tissue cells never became tumor-cells, but were always passively eliminated by the tumor. If we consider the difficulty of obtaining material for these investigations and the great number of deceptive appearances met with in them, the evidence brought out is conclusive. On the other side, it has never been shown that such a transition from tissue to tumor-cells really has occurred; while we know that many processes of growth may suggest such an interpretation. This negative experience together with the positive evidence of the other side has turned the trend of pathologic opinion almost everywhere, and conceptions like, for instance, that of a carcinomatous degeneration of epithelium begin rapidly to disappear, although we will see them yet for many years in our text-books.

The intrinsic importance of this fact that has widely impressed itself during the last year lies in its consequence as far as the search for the origin of tumors is concerned. It is, that we will never be able to judge about it from the tumor itself, since we know that it grows only by multiplication of its own cellular material, that the surrounding tissue cells remain passive or sometimes even offensive, as Orth[6] lately has demonstrated in some cases on epithelioma. This logical consequence led Borrmann to his classic work on the skin cancers; seeing the necessity of selecting the youngest possibly obtainable new growths to elucidate the phenomena of the origin, his attempts were baffled by the observation that even the minutest of them showed the typical tumor structure and had no connection whatever with the surrounding tissue, tumors, the crossection of which figured only about 39 cells. His observations have been ridiculed by Hauser and others to no avail. On the other hand, the conclusions he was bound to draw

from his researches have been confirmed for the adeno-carcinomata of the intestine, of which Markwald[7] has given a very lucid and very convincing instance. He found under the submucosa minute carcinomata of the usual structure, without connection with muscosal epithelium. Similar experiences have been those of Oberndorfer[8] with the intestine and of Goebel[9] with the bladder. The great difficulty in procuring material of this character is obvious. These smallest tumors are only found accidentally; it is certain that systematic search in regions, with predilection the producers of tumors, would reveal a greater frequency. The systematic examination of the region of the naso-labial folds in fetus and infant would be sure to discover still younger tumors. As it is, the results so far obtained must convince us that even by this method the origin of tumors will not be cleared up. We have to be confident that even smaller tumors than those described by the authors quoted will be perfect tumors and will not show any transition to or from the neighboring cells. The origin of tumors will not be solved by the examination of even the smallest new-growths.

This leads us to the modern ideas about the possible sources of tumors. They have found an adequate and many sided discussion in the extensive cancer discussion in Berlin last year[10]. Without entering into the different opinions and theories expressed at that meeting that were not new and that were generally known, we may draw the facit of this great attempt at advancing our positive knowledge as nil. Nothing was said to add important facts to the various theses so often written about and discussed. Nevertheless this negative result represents the stage of our knowledge or ignorance and strongly emphasizes the necessity to search in directions that are accessible and at the same time very promising. The only theory that can not on any positive facts be rejected is that emanating from Cohnheim's genius, attributing the genesis of tumors to the separating off of embryonic cells from their normal relations. The basis for the theory is absolutely founded; we know that such displacements occur; we can demonstrate them and can demonstrate the places where they occur with predilection during the fetal development. We further know that certain tumors offer an absolute impossibility of other explanation but that of a fetal misplacement of cells or tissue-complexes. If we find a complex tumor, a teratoma with brain tissue, long tracts of intestine, skin and bone, like B. Fischer[11] has described it, under the skin of the lower leg, the last resistance against a displacement in one and the same embryo must arise. Such a tumor must have been present in its anlage before the little bud forming later the leg began

to protrude; there are no folds there in which an inclusion could have lodged, it can not have been there before the protrusion began; the cells forming the anlage must have been dislodged in the very earliest stages of egg-division. Other teratomata, especially those containing tissue identical with that of the fetal envelopes, sometimes malignant and metastasizing as chorion-epithelioma over the organs of the adult male organism follow directly in the line as was shown by Wilm's beautiful work, so that it is merely a matter of logic and close observation, to establish a series of tumors, characterized in their individual types by the tissues and location of the displacement of their anlage. The theory is very simple and with the refutation of the tumor formation by involvement of normal tissue the last positive objection against it is removed. The theory of tumors arising from fetally displaced cells is looked upon day for day more favorably; the material indirectly in its support accumulates constantly. It will be the object in the future of experimental investigation, especially since through the latest work of Pick [12] a hope is given to obtain material for it. His investigations on a thyroid carcinoma in fishes of the group of salmonidae that in some cases comes in what has been called endemic form, are giving a good prognosis for the possibility of such work. At the same time it must be repeated, what was said before, that the origin of tumors will not be discovered by the study of tumors, but by direct experiment and by the search in the fetal organism for their primary formation.

The great amount of work that has been done in various countries on the study and transplantation of animal carcinomata has cleared to some degree many phases of the problem. It has been shown by these investigations also that the transplanted tumor-tissue itself only grows out and never converts the cells of the inoculated animal into tumor cells. In all of the morphologic and biologic points of the results obtained in this country and in Europe a perfect agreement exists. Of possibly great value are the observations published by Ehrlich in his biologic study on mouse carcinomata that may lead to clearer views on the greater or smaller virulence or malignancy of these new growths and may altogether give an explanation for the character of malignancy. The reports of the different cancer institutes and laboratories, except that of the New York Institute, are uniform in their conclusions and careful critic. They have done a great deal to bury finally the parasitic theory, based on the presence of cell-inclusions.

It remains only to touch a biologic objection to the embryonal origin of tumors, the assertion that it is impossible for cells to lie dormant for sometimes many years and then begin to multiply and to form tumors. On the basis of observations on protozoa Hertwig[17] has

compared certain changes in carcinoma-cells with those seen by him in consequence of nutritive changes in actinosphaerium. He attributes them to an interaction between the cytoplasm and the nuclear substances, so that by over nutrition of one or the other hypertrophic enlargement and expulsion of the surplus takes place. This, too, is the cause of proliferation of tumor-cells, and by bringing cells under the influence of overnutrition they are enabled to form newformations. He insists that no analogy or proof exists for the dormancy of embryonal cells and does not mention that certain tumors begin to grow often as long as 40 or 50 years after the birth of the carrier, that consist entirely of not only embryonal cells but also of embryonal organs. Hertwig's objection is altogether theoretic and not based on any positive observation. A great number of pathologic phenomena speak absolutely and directly against it.

There are few things in the literature of the last year that directly have enabled us to advance in our methods to solve pathologic problems. One of the most important is Mallory's[18] discovery of a new connective tissue constituent, which he called the fibroglia, forming delicate fibres in intimate relation to the cytoplasm of the connective tissue cells, like the fibres of the neuroglia to the glia cells. Similar fibrils are constant constituents of smooth muscle tissue, here called myoglia. They are found only under certain conditions and certainly have an important role in the development of the connective-tissue system. Pathologically their study is a valuable adjuvant in many difficulties that often obtain in the identification of certain cellular elements. Mallory has utilized them for the grouping of mesodermic tumors, although it must be admitted that our knowledge of their distribution and function is as yet very limited. The methods of demonstration suggested by Mallory are very effective and will greatly facilitate further study.

The morphologic investigation of the pathology of the blood-forming organs has not advanced except in small details. The greater frequency with which they lately have been made the object of study has rather influenced, in a negative way, the doctrines held as proven. In fact, there is hardly one side of the problem upon which a consensus of opinion is brought about. The origin, formation and changes of the blood-cells is as yet obscure in spite of the many attempts to find them. This brings with it the uncertainty about the relation of the different forms of cells to each other and thereby has given rise to interpretations totally opposite to each other. That in many cases the personal belief is deciding is clear, so that it is nearly impossible to pull out the nucleus from the shell. Pappenheim's[19]

Atlas will not help to do away with the confusion; it simply represents the author's thoughts about the subject. The great fight on the genetic connection between mononuclear and polynuclear leucocytes is far from being ended, although we cannot but feel that the tendency is in favor of Ehrlich's older views than of the schools teaching that both classes of cells are derived from the same source and that gradual transmutations occur. As a matter of fact such transitions have not been observed, the very reason that the discussion can not close. Observations like those of Weidenreich[20], that for instance eosinophilous cells are formed from lymphocytes by the ingestion of hemoglobin, are so improbable that they cannot be considered. These very cells have lately been the object of experimental study that at least has brought out their specific reaction in the animal organism. Proescher[21] has succeeded in producing artificial eosinophilia by using the injection of tapeworm extracts. Much more exact, however, are the studies of Opie[22], who, in producing trichinosis in guinea pigs, carefully followed up the development of that condition. The infection must result in some influence necessitating a greater supply of these cells, perhaps it acts on the bone-marrow, that shows an enormous overproduction of the eosinophilous elements. That, besides this, other factors must be at work, is shown by the local accumulation of these cells in certain viscera in the form of eosinophilous abscesses. The same occurs in human pathologic processes and was lately described to have existed to an extraordinary extent in an uterine tumor. As essential for these local eosinophilias must be mentioned the abscence of neutrophilous elements, thus clearly showing that the stimulus is specific for the former. With the fact that artificial eosinophilia can be produced a field is opened for greater elucidation of many questions in hematology.

The subject of arterio-sclerotic changes has had much attention. As far as its pathologic character is concerned nothing new was developed. It had in another direction a great effect in combining with it the question of the nature of chronic nephritis. This disease has been dealt with for centuries as a primary disease of the kidneys due to chronic intoxication caused by faulty metabolism or katabolism. The effect was considered as a chronic inflammatory process, leading to scar formation and to atrophy and destruction of the secreting epithelium. Comparison of pathological and clinical observations were, however, so often absolutely contradictory that recourse was taken to the assumption, not of histologic, but of functional changes These views have been changed, and chronic nephritis begins to be looked upon not as a primary change, but as secondary to changes

altering other vital organs of the body. Pathologically, the change has taught us that the histologic alterations of the renal structures are by no means always the expression or cause of functional symptoms clinically called nephritic symptoms. The number of kidneys found enormously diseased pathologically and never having caused during life a single nephritic symptom, has always been a riddle. The word nephritis, meaning, clinically, a chronic inflammatory condition, must be changed to a term generally comprising any disturbance of the secretory function of the kidney. Pathology should not conclude from the chronic nephritic changes on a chronic nephritis in the clinical meaning.

It is difficult to deal with the pathology of tuberculosis without involving the bacteriologic side. The pathology, therefore, may lead us over to the bacteriological summary. The general aspect of this subject has greatly changed during 1905, unexpectedly; from the formerly firmly held views, a certain insecurity has arisen. The impetus for this change was given by Behring's pronouncements of 1904 that, although generally not accepted in their totality and by different writers proved as untrue in all of their details, nevertheless caused investigators to deliberate as to whether ideas before held for expressions of truth were really based on reliable, well observed and accurately interpreted data. It was soon found that although they were true, they were not generally true; that we could not claim to be masters of the knowledge of tuberculous infection by adhering to thess views in all cases. In the first place, the way of infection in the most important form, the pulmonary tuberculosis, was in most cases attributed to direct infection by inhalation, although for other forms other ways of acquiring the disease were recognized, and also even for certain varieties of pulmonary infection. Careful pathological observations (for instance Orth's) have demonstrated that the criterion for the primary pulmonary infection does not stand investigation, as it can be shown by observation and mainly by experiment, that a pulmonary infection is in the great number only the consequence of a previous infection elsewhere in the body, very often insignificant. The determination at autopsies of the place of primary involvement in individuals dying of pulmonary tuberculosis has been recognized as unreliable in the majority of cases. Pathologically we can very seldom determine that the lungs were primarily infected. The possibilities, nevertheless, which allow the inhalation of bacilli, later to be followed, in a circuitous way, by the pulmonary disease are not diminished by this change of ideas. We know already of a great number of ways (see Weleminski[25]) in which the virus may pass from the air passages into

the system and finally find its place of predilection in the pulmonary tissue. Practically, then, the methods of prevention of inhalation are not altered in their importance. In fact, all evidence points to the fact that most cases of this form are due to the inhalation of bacilli. Behring attributed great importance to their ingestion as leading to involvement of the lymphatic mesenteric structures and from there to lung disease. To a certain degree he has been right, meaning, that before his assertions were made, the frequency of an intestinal primary infection was underrated. Careful statistics and examinations have shown that the number of cases in which such a primary intestinal infection preceded the pulmonary lesions are not so rare as was thought. They have, however, shown, too, that it is impossible to attribute to this mode of infection the origin of the majority of pulmonary infections. The inhalation or the bringing into contact with the lymphatic tissue of the mouth and throat still reigns supreme as the main source of infection. The opinions about the possibility that tubercle bacilli may make their entrance into the body without causing histologic changes at this point are just now clashing on each other. It was also mainly in consequence of Behring's theses that this subject has been investigated. While many facts point to such a possibility, others speak against it, and it must be admitted that the data on which the latter are based (Baumgarten[23]) are derived from a more exact method of experimentation than those of the former. That the tubercle bacilli can pass the mucosæ without causing lesions, seems, a priori, probable and is in fact proven by pathological observations and by the experiments of Ravenel, Behring, Lubarsch and others. The question is closely connected with another one, namely the possibility of the bacilli entering and remaining latent for a shorter or longer period, an assumption that was strongly upheld, especially by Behring. Experiments made in this direction in Weichselbaum's[24] laboratory have made it very probable that this can occur and that the bacilli, at least for a certain period, can remain with the tissues without causing lesions. Under what conditions this happens and what the part of the tissue or the bacillus in it is, we do not know. Whether such bacilli are too little virulent to cause lesions and are resorbed gradually, or whether they may begin to multiply at a favorable time is difficult to determine. Although theoretically of high importance, the question has little practical bearing in dealing with tuberculosis.

The only question that has found its final answer this year is the etiology of tuberculosis. Koch's opinion on the pathogenic difference of human and bovine bacilli is generally accepted, although with great hesitation and dislike. Koch has never asserted a difference of spe-

cific character of the two forms of microbes, only a difference in their pathogenicity for the animal organism. That culturally and biochemically definite differences exist, which, even without animal experimentation, allow of distinction, is the great work of Theobald Smith[26]. They are varieties or races of the same species, the pathogenic qualities being different. Under rare conditions an organism, ordinarily immune to one of these, may be infected, a cow may die from infection with human bacilli and a human being by the bovine variety. This occurs and must be considered in the summary of the history of human tuberculosis. That it plays only an infinitesmally small part in the totality of human tuberculous infection is the great addition that the year 1905 has affixed to our knowledge as secure property. It must not be mistaken as an apprehension of great danger from this source that the prevention of infection with bovine bacilli has been made a paragraph of the final summaries of the last Tuberculosis Congress at Paris, nor even the expressions of the German commission that prevention of infection with bovine tuberculosis is one of the measures in the fight against the human disease. If this commission had been allowed to give its personal opinion freely, they would have ranged the danger with that of other very rare infectious diseases. The condescension to such preventive measures is nothing but a sweetening of the pill that the adversaries had to take.

We have thus finally arrived at the established fact that the white plague is, in about 89 per cent. of the cases, transferred only from man to man. In regard to Behring's contrary opinions such a mass of important material has lately accumulated that they need not be seriously considered any more. The same obtains for his ideas of the long latency of the disease, culminating in the assertion that in most cases the infection dates back to childhood. This is certainly not the case, although it must be said that a general inclination exists to day to go back in the history of the single case, not to the beginning of the subjective or objective symptoms, but to the associations and habits of earlier periods. The period of incubation or rather of latency in many cases appears to be long.

We cannot close the discussion on tuberculosis without at least touching the subject of its congenital (often called hereditary) acquisition. The last year has increased our knowledge greatly on this question, so that the existence of such a condition cannot be called any more a curiosity, but one that deserves earnest exploration. Besides the reports on about 18 tuberculous infants, either born with patent tuberculous lesions or developing them within the first month of life, in which latter case the disease must be pronounced congenital on ac-

count of the lack of time for the development of the extensive lesions in the short period after birth; we must be thankful to Schmaus[27] for having directed attention to tubercular lesions in the maternal placenta. In a careful and tedious study of placentas derived from women suffering from tuberculosis, he has, in the majority of cases, found foci of tuberculous tissue, sometimes involving the fetal portions. A peculiarity of these lesions is their great richness in tubercle bacilli. The constant disturbance of the placental circulation leading to hemorrhages, etc., offer a favorable medium for the transmission. It is of importance also that these facts could be established in cases where the disease of the mother was of small extent, and that the bacilli in perhaps all tuberculous patients are at least sometimes circulating with the blood.

Methods to deal with the disease on the basis of influencing it by means of its bacterial nature have not yielded anything new, except the announcement of Behring, made in Paris. From the fragmentary and unsatisfactory, seemingly, at places, fantastic words of Behring, that thus far have reached us, no definite inferences can be drawn. It seems, however, from them, that the principle which he follows, is merely an improvement or a change of older methods, practically doing away with the inconveniences involved in them. Dead bacilli have been used before; perhaps Behring has succeeded to remove from them substances not necessary for immunization, but toxic and destructive. If this should prove to be true, the discovery would at least permit of experiments with safety on human beings. What the result of such experiments would be, would take a number of years to determine. It is impossible to form definite ideas about what Behring claims to have found.

The investigations of the phenomena of immunity have again consumed the greater part of the work done in bacteriologic lines. It would be utterly futile and useless to do justice to it by detailing it in a page or two. What can be done is to try to make clear to what end this work has lead or will lead. Its center has been and will be for a long time Ehrlich's side-chain theory, a theory that not only tries to explain the presence of immunity, the successful or unsuccessful fight between host and parasite, but has thrown its weight into the widest-reaching biologic problems. The wonderful force of this theory is shown by the unearthing of biologic relations formerly hardly guessed at; its admirable ingenuity is proven by the immense number of absolutely new facts that have been brought together by it. The seeming easiness with which all of these facts could be fitted into the range of the theory has been fascinating to such a degree, that by many it

was believed to be the final truth. Ehrlich himself has never believed it, he is too wise a man to believe that the human brain could go to the deepest depths of nature's work. He himself has often and often insisted on the heuristic value of his theory to be a means to discover new facts, and, when finding that they contradicted the theory, to stimulate the production of other hypotheses suggesting a solution. While Ehrlich's ideas were directed by the laws of chemistry in a restricted sense, he always paid attention to the multiformity and obscureness of biologic processes. As far as he could, by conscientious attempts, bring his observations into the range of chemical and physical laws, he will never be contradicted. The chemical complexity of the diphtheria toxin stands firm against all the attempts to explain it by the laws of physical chemistry or to compare it with the behavior of colloidal solulutions. It is true that in some difficult problems, the way out, although exceedingly original and ingenious, was more sophistic than true. This seems to be so, for instance, for the complement deviation by free amboceptors, as far as at the present time the work of Buxton[28] can be judged. That even basal principles of the theory can be assailed by Ehrlich's own method is lately demonstrated by Friedlander's[29] investigations into the agglutination of different races of typhoid bacilli. The result of this careful work formulates a difference between the binding groups and those groups producing antibodies, a view that in the relation between toxin and antitoxin is liable to throw a light clearing up many obscure points in the toxin action. It is possible that in the future, when greater certainty obtains on the character and behavior in reactions of colloidal substances in the gel and the solution phase, many immunity reactions may be explained in the same way. Still, it is for the present, with only the assumption, not proof for the colloidal nature of the immunity substances, not known, in which way the absolute and very strange specifity of the immunity reactions can be explained. We must admit that a number of postulates will yield and have already yielded to conclusive, contradictory evidence, but the very fact that this evidence means a correction of some of the statements of the theory, and of the theory itself, is proof for the basal correctness of the theory. There is no other way known at the present time to control the latter than the methods that have lead to an amount of knowledge astonishing in its extent and importance. The very reason why just now apodictic statements about the fall of Ehrlich's theory should be avoided is that we have nothing to place in its stead but vague, although often suggestive, comparisons. If a definite open way could be found to investigate the problems that Ehrlich so splendidly attacked by his method, a more rapid decision might be expected. As it is, Ehrlich's

course will be followed until a more satisfactory explanation of his results can be demonstrated. So far, this has not been done in a single case, as far as the principles of the theory are concerned. Ehrlich's theory has not fallen, although its aspects in many directions seem bound to be altered. The principles will survive until an insight has been obtained that we, with our present capacity, can not realize. That the immunity-reactions with which Ehrlich's school has mainly dealt, the hemelytic, bacteriolytic, precipitant and agglutinant, reactions are not the whole of the processes in the fight between host and parasite and in the establishing of immunity in both of them, begins to be more apparent through investigations published last year. They have thrown a light on a problem so far inaccessible to bacteriology, the infectious action of a number of bacteria, for which neither the bactericidal nor antitoxic agency of the host, nor the amboceptor or toxin part of the parasite could be discovered. This obtains among others (for instance anthrax), mainly for the strepto- and pneumococci, the effect of the growth of which in the animal body so far was unexplainable. Neufeld, Wright[10], Rectoen[31] have established the existence of substances that formed in the serum of the infected organism and act on the bacteria in a way that make them accessible to the phagocytic action of the leucocytes. This mode of the actions is at least certain from the exact experiments of Neufeld. Wright and Hectoen, who call the substance opsonin attribute to the leucocytes the main part in the reaction. The subject is as yet little explored, but promises great results in the future. It will form a connecting link between the phagocytosis of the Metchnikoff school and the more humoral views of the Ehrlich theory. Far more obscure are, as yet, the so-called aggressins of Bail[32], bodies that are claimed by him to be formed by the action of bacteria in an infected organism and allow the bacteria to multiply, in other words substances to antagonize the natural bactericidal power. The method of experimentation of Bail is very complex and subject to many sources of error. Wassermann[33] has already demonstrated that for the typhoid bacillus the aggressins are nothing but degeneration products of the bacilli due to their destruction by the body fluids. He has been able to obtain typical aggressin action by extracts of these killed bacilli and made with serum, bouillon and even clear water. Nevertheless, certain sides of Bail's observations can not be explained in this way, the fact that in an organism gone through an infectious disease the causative bacteria can for a long time afterward be present in great numbers and with full virulence, has remained unexplained so far and might be understood on the basis of aggressin-processes. Wasserman, however, is inclined to believe rather in a lolal immunity, that cer-

tainly in some cases and conditions can be proved to exist. All of these problems wait for solution; they will, when solved, tell us more about the immunity processes than any theory so far advanced is able to do for the present.

Bacterial and other parasitic diseases have come in for a great deal of work, most of it corroborating and filling out gaps, but a great deal, too, announcing new findings. As to bacterial diseases, little is to be said. The views on typhoid have greatly widened with the marvelous complexity of the agglutination conditions brought to light lately. The work of Zupnick[34] especially has recalled for practical purposes more the clinical than the bacteriologic diagnosis. This does not mean that the latter is unreliable, but that for being made conclusive it must be surrounded with so many and complex safeguards, that a single reliable Widal reaction would take at least a day's work. Typhoid is beginning more and more to be considered the name for a group of diseases than as a pathologic entity. The consequence of this may at some time practically prove of great importance. As to the entrance of the typhoid virus, the conception of the primary intestinal infection must be restricted at least, as certain experimental observations rather suggest an entrance through the pharyngeal mucosa. The work on the dysentery bacilli has been thorough and multifold; uniformity of opinions has not been reached, even the pathogenic quality has not been firmly established. It is certainly true that numbers of the bacilli are often found where no dysenteric symptons exist, even in the healthy individual; on the other side, typical dysenteric phenomena occur without the presence of the bacilli. Dysentery is certainly not an unit, and, perhaps, the bacilli find in it only the favorable conditions for multiplication.

Mention must be made of a paper by Wright[35] that seems at last to solve the riddle of the beri-beri etiology. He claims to have isolated a bacillus as the cause. It has to be said that the investigation, so far as the bacillus is concerned certainly is in many points not convincing. It is different with the vast amount of epidemiologic and sanitary observations made by the author, that in their entirety can not be interpreted but by the assumption of an infectious micro-organism. This is what Wright has established in the course of many years. Durck's[36] contrary conclusions are only based on pathologic material of a few cases.

The diplococcus of croupous pneumonia has had a great deal of attention, not only in a purely bacteriologic way, but also from a sanitary and hygienic point of view. While the first part of the work deals with merely the biologic questions that have already been mentioned, the more practical work represents an immense amount of labor spent,

but with no results of great importance. The almost only valuable point to be gleaned from the volume published by the pneumonia commission[37] is the great general frequency of the occurrence of virulent pneumococci in mouth and air passages of healthy persons. As the volume represents only a part of the results to be published, it may be that the contribution will be more fruitful, although to the initiated the hope is small.

Variola and vaccinia, as well as scarlet fever, have had a comparative rest. Some papers on Mallory's scarlet fever organism contradict themselves directly, the one contending that they are to be found in the blister fluid from the skin of patients, while the other asserts that they are not to be found in the living skin, but only 24 or more hours after death. In a minority of observers the cytoryctes variolae still lords it; in Bosc[38] of Paris, a strong combatant has arisen. The work of Ewing, begun in 1904, and continued during 1905[39] has brought out evidence that will be hard to contradict. Again, however, it must be emphasized, that nowhere else such a startling parallelism of degenerative processes with the cycle of development of a protozoic animal has been encountered, a parallelism that follows even the clinical phases of the disease in which it occurs with unalterable regularity. We know only of one similar observation, that of the Negri-bodies in hydrophobia, and here, too, the fight wages between parasite and degeneration. It is not impossible that a line followed the way of Hertwig's suggestions above quoted may lead to definite views. Ewing has already suggested this, but it can be done only by a much more careful study of the minute structures of the cells of metazoa. Some observers in Europe, (Retzins, Holmgreen, etc.) have conducted such work and the details described by them are bewildering. Before not all of these details are thoroughly investigated and explained in their character, we should not call cell-inclusions parasites without more evidence. It must again be said that the existence of such further evidence in the case of the cytoryctes cannot be a priori denied. The literature on variola has been enriched by Councilman[40] by a brilliant preliminary report on his investigations made in the Philippines. It contains many facts and mainly suggestions, that for the future solution of many yet obscure points in the life history of variola will be of immeasurable value. We hope that experiments have not been omitted on the filterability of the variola-virus, and await the full report with great expectations.

The last words suggest a remark on some splendid results obtained under the auspices of the Bureau of Animal Industry. Hog cholera was for many years considered as an infection, the etiology of which had been fully established. Some great minds, however, Salmon at

their head, had all along had some misgivings as to the true nature of this etiology. The suspicious evidence accumulated and was finally submitted to a thorough and scrutinizing dissection. The result was the fact that the etiology of hog cholera is not represented by the bacillus, given its name, but by a virus that passes the porcelain filters, an ultra microscopic organism. As the hog cholera bacillus is a well defined bacterium, nearly related to the typhoid and thereby to the coli group, the supposition that the filterable virus might be a developmental stage of the bacillus is, of course, excluded. This startling denouement is accompanied by the other, the remarkable constancy with which the hog cholera bacillus is present in the lesions that are caused by the ultra-microscopic virus. This fact is exceedingly important, and gives strength to the warnings that have been made before from several sides, not to take as evidence alone the constant presence of a microbe, be it even a pathogenic one, as the hog cholera bacillus, as confirmation of its etiologic meaning. Such a suggestion has even been made for the case of dysentery, and many observations concur to give this suggestion a justifiable existence. For a problem to be mentioned later, the same precaution is advisable.

Perhaps the most fascinating part of the work done in parasitology, fascinating, because it has with a sudden stroke called our attention to the fact that besides bacteria, other organisms play an imporant part in widely devastating infectious diseases, is the development that our knowledge of protozoan-infections has obtained. The literature on this subject has increased to a degree that it will soon be out of reach of the not specialist reader. The main feature of the subject represented by the infections caused by a protozoan belonging to the sporozoa and generally called trypanosoma. Several, especially in tropical countries, widely distributed and mostly fatal diseases of man, have been recognized as due to infection with this protozoan. In the front of interest stands the mysterious sleeping sickness that in certain parts mainly of Africa claims thousands of victims yearly and can assume epidemic, or, rather, endemic character. The disease is caused by the bight of an insect, the definite species of which so far has not been with certainty determined, that has fed on an infected individual. The issue of such an infection is mostly fatal. In certain parts of southern Asia, protozoa are at the bottom of a peculiar cachectic-anaemia, going along with an immense hypertrophy of the spleen, that is caused by an organism nearly related to the trypanosomas. A peculiar ulcerative condition of the skin, that in the different countries goes under different names, but most widely known as the Aleppo-Beule, is produced by a very similar microbe. These organisms were

first discovered by Leishman, and the form in which they are usually found in the lesions goes under the name of Leishman's bodies. Last year we considered them as curiosities, in 1905 they have been established as the cause, which, in many of the regions, is one of the foremost dangers to the life of the inhabitants. It is not feasible to enter into details of the work that has resulted in this enormous advance in our knowledge. For trypanosomas we have in Laveran's[41] book a work that comprises everything that we have learned.

It would take too much space to go into the many other discoveries in which protozoa, especially in the tropics, were found in man, and probably as causes of disease. These investigations are in their infancy, but there is no doubt that very soon our knowledge on this side of parasitology will be as rich as that of the bacterial infections. Already investigations are under the hands of many men, trying to not only develop the cycle of development of these organisms, but also to clear up the character of their pathogenic action. Ehrlich has made the first step in this direction with his experiments on the action of trypanred on trypanosomes. All of this work is more difficult and complex, since here we have, like in malaria, to deal with a change of generations, and it will take a long time before such a cycle, even for a single parasite, has been fully established. For the trypanosomes, it seems, the attempt will be successful, since we have reason to believe that some of the pathogenic forms are reduced in their cycle, and are only mechanically transmitted by insects.

Malaria, we may omit from our review, because nothing of any importance or new has been brought out. A paper published by Ch. F. Craig (Americ Medri. Vol X No. 24 and 25) is of great importance for many questions. Its appearance is so very late that the work can not be considered here. It may be allowed to state that in the matter of prevention of malaria, an opinion has become general that not one of the methods recommended alone will do the work, but that with combining them according to the local conditions, it is possible to eliminate malaria. Koch's quinine method will do good, where it is possible to apply it, but it being used alone fails for patent reasons in the majority of cases. Destruction of mosquitoes and isolation of patients are necessary where a controlling of the populace is not possible.

Very little, too, can be said in a review considering pathologic and bacteriologic questions about yellow fever. We can be proud that it is so, because the researches made some years ago in our own country have so exhausted the subject, that it seems impossible to give important additions to it. In 1904 the French Commission gave a good exemplification of this assertion by only confirming fully what had been

found in Cuba by Americans two years before. The only new point evolved by them was, that the period of incubation, by Reed, Carroll and Lazear determined as 3 to 5 days, could be prolonged to 12 days. A similar proof of the exhaustive work of our country is offered in 1905 by a German investigation (Otto and Neumann[24]) made by official authority that has not added anything to what we know. The ultramicroscopic investigations made by this commission were made without a thorough knowledge of the possibilities afforded by it as to the determination of the character of autonomously moving particles. With this exhaustive result of our own former and later researches and the easiness of its practical application, the epidemic last year in the south must correctly be called an anachrononism.

We could say a great deal about other parasitic diseases, new helminths, new filaria-infections and the investigation of the relation of the infection by the latter to the stages gone through in the second host, the mosquito. The study of anchylostomiasis has been very extensive and brought out above all (Loos) the fact that the infection occurs mostly by the larvae penetrating through the skin. The tick-fevers or piropslasmoses (red water, etc.) in cattle, sheep, horses and dogs have received, too, careful research with important results. The human piroplasmosis found in Oregon and Idaho has been questioned in its etiology by Stiles; with what right, we can not tell yet. As to the cattle piroplasmoses Koch's investigations have revealed very important details as to immunity and the method of infection. With the beginning of last year, the spirochaetes entered the field by the discovery of Ross and Milne of the presence of such organisms in the blood of patients suffering from tick fever in the Congo Free State. Dutton and Todd later established that they were transmitted by a tick (ornithodorus moubata) infected by biting fever patients. Koch has confirmed these observations, and as for the spirochaete obermeieri similar relations seem to obtain. Schaudinn at least has demonstrated that this parasite multiplies in the intestine of the bed bug, while it was long since announced by Karlinski that they could remain alive in this insect for as long as 30 days. Marchoux and Salimbeni found in a fatal disease of fowl in Brazil a spirochaete that was also transmitted by the tick (Argus miniata). In the blood of patients suffering from yaws lately also spirochaetes have been found. A spirochaete that deserves special attention is the spirochaete pallida, discovered by Schaudinn in syphilitic lesions. The immense interest that this organism has aroused is natural in view of the great importance of the disease on general health conditions and of our so far absolute inability to account for its etiology. Although the constant presence of the

spirochaete in specific lesions, its finding in the blood, in organs of congenital syphilis, in the experimental syphilitic lesion produced by human virus in monkeys, etc., and on the other side its total absence in any other pathologic condition appear highly suggestive; the conclusive evidence for its etiologic character is not brought out yet. It is a very fortunate coincidence that Shaudinn's discovery was preceded by the success of a number of investigations (Roux, Metchnikoff, Neisser, etc.) in inoculating syphilis into monkeys, thus creating the possibility of experimental dealing with the many obscure features of the disease. As to the etiology, this possibility will be of preeminent importance, and we may expect with a great deal of confidence, that it will assist in the demonstration of the etiologic role of Schaudinn's spirochaete.

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OBSTETRICS AND GYNECOLOGY.

IN CHARGE OF

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PUBIOTOMY. The year 1905 undoubtedly will go down in the history of obstetrics as the year in which pubiotomy was generally recognized as one of the most valuable operations of modern obstetrics. It seems appropriate, therefore, to begin this review with a detailed consideration of this operation.

Sigault in 1768 was the first to suggest a temporary enlargement of the pelvic canal by cutting the pubic symphysis. The history of symphyseotomy is well known. It is obvious that in pre-antiseptic times the results of this operation were extremely unsatisfactory. The operation soon fell in utter disgrace, chiefly by the efforts of Baudeloque. Conditions changed markedly with the introduction of antisepsis. About fifteen or twenty years ago obstetricians once more began to practice symphyseotomy. Technique and instrumentarium were improved and in the hands of Morisani, Pinard and Zweifel the operation yielded decidedly satisfactory results. Zweifel advanced convincing proof that by means of this operation fully developed children could be extracted from contracted pelves with a true conjugate down to 6.75 cm. Nevertheless symphyseotomy did not become popular. While a hundred years ago fought on theoretical grounds, of late the operation was objected to because it may lead to unavoidable injuries of a serious nature, such as tearing of the bladder, etc., because some patients, in whom the symphysis failed to unite, remained crippled forever, and finally because symphyseotomy is an "unsurgical" procedure. Especially on this latter issue Zweifel, the defender of symphyseotomy, and Gigli, the inventor of the modern pubiotomy, came to a hard clash[1]. Gigli's answer to Zweifel's paper[2] makes interesting and amusing reading.

The essential difference between symphyseotomy and pubiotomy lies in the fact that the latter operation accomplishes the temporary severance of the pelvic girdle by a cut through the pubic bone just laterally to the symphysis. As early as 1821 Champion de Bar le Duc and later in 1830 Stolz suggested this operation, contending that such an incision through the bone would present more favorable conditions for healing than the opening of a joint and a cut through a cartilage. With the only exception of the paper of Zweifel[1] already referred to, in my knowledge no effort has been made of late to deny this claim.

In 1841 Galbiati went one step further and divided both pubic bones, calling his operation bi-pubiotomy. The increase in the size of the pelvic canal obtained in this manner was such as to justify the hope of doing away with Cesarian section entirely which at that time certainly was a very dangerous operation. Pubiotomy was, however, never practised to any extent. To cut through the pelvic bones by means of the knife and chisel was too difficult a task to commend this procedure for extensive use. In 1892 Gigli of Florence suddenly and completely removed all the difficulties of this operation by inventing his steel wire saw, an instrument which today is used the world over; but it is probably not generally known that Gigli invented this instrument for the express purpose of experimenting with pubiotomy on the cadaver. Bonardi of Lugano in 1897 performed the first pubiotomy on the living and obtained a perfect result although working under most unfavorable external conditions. The present enthusiastic acceptance of pubiotomy by practically all the leading obstetricians of Europe is due to the noteworthy modifications of the original operation which have been suggested by Doederlein[3]. Gigli's original operation consisted of the following steps: In a line running from the middle of the upper edge of the pubic symphysis downwards and slightly outward skin and underlying tissues are incised with the knife down to the bone. After blunt dissection of the tissue adherent to the posterior surface of the pubic bone a Gigli saw is led around and the bone divided in an oblique line corresponding to the oblique skin incision. Van de Velde of Haarlem[4] modified the operation by dividing the pubic bone in a vertical line which begins at the upper edge of the bone just inside of the pubic tubercle and terminates at the lower edge about where Gigli incision ends. It may be stated that this vertical incision of Van de Velde is at present the generally accepted one. Doederlein's merit in the popularization of pubiotomy lies chiefly in the invention of his subcutaneous method. He discarded the long vertical skin incision and substituted for it a short horizontal incision, about three centimeters long, running along the upper edge of the pubic bone just laterally to the symphysis. There can be no doubt that the subcutaneous methods are rapidly gaining in favor. Walcher[5] has invented an entirely subcutaneous operation which is highly recommended by Pfeilsticker[6]. To enable the reader to understand the rationale and the merits of the subcutaneous methods, I shall first describe the next step of the operation, viz.: the introduction of the saw.

In the open method, by means of dissection, a canal is opened around the pubic bone. In Doederlein's method, the finger enters through the small horizontal incision and separates the adherent tissue from the posterior surface of the bone. A guide needle is introduced

through this canal which finally, just under the lower edge of the pubic bone, is pushed through the skin of the labium majus. The saw is attached to the guide needle and pulled through the canal. Differently shaped needles are used for this purpose, all more or less resembling aneurysm needles. A very ingenious little instrument which permits the simultaneous introduction of guide needle and saw has been described by Seeligmann[10], and has recently been praised by Duehrssen[12]. It consists of an appropriately curved groove director. The little loop at the end of the Gigli saw is laid around the pointed end of the probe while the saw itself lies in the groove. Walcher in his completely subcutaneous method punches his needle without any preliminary incisions directly through the labium majus upward behind the symphysis and passes through the skin near the pubic tubercle. He controls the course of the needle with a finger in the vagina. The question whether the introduction of the guide needle from above downward or vice versa is more advantageous is still *sub judice*. Doederlein's incision, of course, calls for the introduction from above. Schauta[7], Buerger[8], Zweifel[9], Seeligman[10], Tandler[11] and others favor the route from above downward. Preference is given this route because it is supposed to offer less risk of injury to either bladder, ureter or the large vessels in the *lacuna vasorum*. One of the greatest advantages of pubiotomy over symphyseotomy lies in the fact that the incision does not communicate with the vagina, if not by accident a very deep laceration of the vaginal wall occurs. These lacerations in the opinion of Porak[17] are common, but they have undoubtedly become much rarer of late, since it has become evident that they can successfully be prevented if the lower point, through which the saw passes, lies well within the large labium, and not near the small labium or the vagina as often was the case in the earlier operations. Of course the employment of any of the methods in which the needle is introduced from below guarantees the favorable situation of the lower opening. Pfeilsticker[6] particularly emphasizes that in taking this route the bladder can be positively protected against any injury if the point of the needle on its way upward is controlled with a finger introduced into the vagina. The needle is always held close to the bone and if possible kept beneath the periosteum.

From 15 to 25 to and fro movements of the saw suffice to cut through the bone. If the cut ends do not immediately separate from one to two cm. it can be assumed that fibrous ligaments running along the upper and lower edge of the pubic bone have not been divided and the saw must be pulled up and down a few more times. When the complete division of bone and ligaments is secured the saw is withdrawn.

The idea of leaving the expulsion of the child to natural forces is generally repudiated. Some writers favor the use of the forceps, others version, the former apparently being in the majority. Duehrssen[12] pleads for routine version. It has already been pointed out that a deep laceration of the vaginal wall, which would establish a communication between vagina and the field of operation, is one of the most unfavorable and most dreaded complication of pubiotomy. In general a forceps seems more liable to produce such an injury. Version on the other hand has the decided disadvantage of increasing the danger of a puerperal infection by necessitating the introduction of the hand into the uterus. Buerger, Franque[16] and others have pointed out the great advantage of pubiotomy over symphyseotomy, and as will be later seen also over Cesarian section, in that pubiotomy can be successfully performed even in infected patients. It seems to me that just this one striking advantage would be obviated by routine version. I think it would be safer to accept the forceps extraction as the operation of choice and to perform a liberal episeotomy on the other side, whenever the *introitus vaginae* seems excessively stretched during the extraction. If necessary the cervix first has to be completely dilated. The usual methods are employed, Hohlweg[13] used the Bossi dilator.

Immediately after the division of the *os pubis* the cut ends of the bone are separated from 1 to 3 cm., but during the passage of the fetal head through the pelvic canal, especially at the time when a strong traction is made with the forceps, or at the heighth of a labor pain the ends easily separate 6 to 7 cm., as e. g., is recorded by Hohlweg or Reifferscheid[14]. In order to avoid a too wide gaping with its possible danger of an injury to the sacro-iliac joint, Doederlein advised to apply a rubber bandage around the patient's hips. This method has been adopted by some, e. g., Sitzenfrey[21], on the other hand, it is refused for theoretical reasons by Baumm[22] who otherwise has enthusiastically adopted Doederlein's method after having had very unfortunate experiences in two cases with his own modification of the original Gigli operation.

As soon as the child is extracted, the hemorrhage which at times is quite profuse, is stopped. If the vertical cut through the pubic bone is made within the pubic tubercle, th. i. is not more than 2 cm. distant from the symphysis (Sellheim)[18], and if the guide needle is carefully introduced close to the posterior surface of the bone no larger vessel can be injured. A free venous hemorrhage results from an injury of the dorsalis clitoridis and the plexus pudendalis impar. Tandler[11] contends from anatomical investigations that a laceration of the corpus cavernosum clitoridis seems unavoidable. In his opinion, if not in-

jured by the guide needle, it is torn when the bone ends separate. Sellheim[18] and Walcher[5] show how an injury with the guide can be avoided by keeping close to the lower edge of the bone. In the open methods of Gigli or Van de Velde the control of the hemorrhage is easier because it can be accomplished under direct control of the eye. In the subcutaneous methods, which at present are generally preferred, the hemorrhage is checked by packing the wound canal with gauze or by external compression by means of heavy sand bags and a tight bandage. To my knowledge there is no case recorded in which this hemorrhage was of a really serious nature. The formation of large hematomas, however, is frequently mentioned. In most cases they seemed to have disappeared promptly, in a few suppuration occurred. It is obvious that this latter complication can be more successfully avoided if the wound does not communicate with the vagina.

No attempt is made at present to unite the cut ends of the bone by means of a suture. Most operators sew, if possible, the upper incision, and drain through the lower opening if drainage is necessary. Any injury to the perineum is carefully repaired.

The simple Scultet flanell binder around the hip seems today in general use as the only means of keeping the cut ends of the pubic bone in approximation. If no complication arises the patient is kept in bed from two to three weeks. The women often at first complain of a little pain at the side of the incision sometimes running down the leg, but soon all discomfort disappears. Van de Velde[15] emphasizes that in symphyseotomy the cut ends may fail to unite entirely or the union may be affected by fibrous tissue only, in which case the locomotion of the patient is seriously interfered with. In pubiotomy such an unfortunate sequel of the operation so far is unknown. It is interesting to note that x-ray pictures taken thirty days after the operation e. g. by Buerger[8], Franque[16], etc., show distinctly the cut ends still separated while the patient's gait was absolutely normal. Reeb[26] thinks that this fact could be easily explained by a still insufficient deposit of lime salts in the otherwise normal osseous callus. This sometimes is very thick and seems, at least in some instances, to lead to a permanent enlargement of the pelvis. Van de Velde[15] lays much stress on this advantageous feature of pubiotomy. One of his pubiotomized patients a few years later again became pregnant. At term, under anesthesia, the child was delivered without any great difficulty.

The immediate effect of pubiotomy upon the size and the shape of the pelvis has been carefully studied both upon the cadaver and the living. Certain variations in the results of experiments on the cadaver can be easily explained by the fact that the pelvic joints at the normal end of pregnancy are capable of unusually large excursions.

For obvious reasons but a few such pelves were available for experimentation. Cauvengerghe[19] with a separation of the cut ends of 4 cm. measured an increase of the conjugate of 1 cm., of the transverse diameter of the inlet of 1. 4 cm. A separation of 4 cm. in his opinion is liable to injure the sacro-iliac joints. The enlargement of the pelvic inlet is greater on the divided side. Rosenfeld's[20] studies on pelves of cadavers yielded a similar result. He furthermore observed that in flat pelves the transverse diameter increases equally on both sides, while in equally and transversely contracted pelves the transverse diameter shows a comparatively larger increase on the side of the incision. This observation is of considerable practical importance and justifies the demand made by several authors to perform pubiotomy on the side on which the occiput lies, or will lie, if version is contemplated. Experiments of Sellheim[23] in which he studied the comparative effect of symphyseotomy and pubiotomy led to somewhat different results. He found that in both operations the enlargement obtained with a certain distance of the cut ends is the same and in both operations is equal in both halves of the pelvis. Of interest is his observation that this increase of the dimensions of the pelvic inlet transforms the pelvis into one of the kyphotic type. Hohlweg[13] was so unfortunate to loose one of his patients. Measurements taken at the post mortem showed an increase of one half centimeter of the true conjugate and of 1 cm. of the transverse diameter with a separation of but 2 cm. of the cut ends.

The indications for pubiotomy are plainly stated e. g. by Kannegiesser[24] who says that for obvious reasons this operation must be suitable for all cases in which symphyseotomy is considered indicated, that is according to Zweifel, in flat pelves with a conjugata vera between 6.75 and 8.5 cm., in generally contracted between 7.5 and 9 cm. Many of the writers give the exact pelvic dimensions of their patients. Reifferscheid describes one case with a true conjugate of 7 cm., another case of a generally contracted flat rachitic pelvis with a vera of 6.75 (in both instances measured with the Bylicki-Gauss instrument). Full term children were extracted apparently without any difficulty.

I do not know of a single record of a case in which a man had failed to extract the child after having performed pubiotomy. If an operation, which can be performed with comparative ease with a decidedly simple instrumentarium, is suitable to overcome the difficulties offered by a pelvic contraction down to a true conjugate of 6.75, this operation seems destined to supplant Cesarian section for relative indications and to reduce the necessity of perforation of the living child practically to nil. This is the way in which all the later contributors to the question are reasoning. Records of successful operations are

multiplying at a fast rate. While Gigli in a paper read before the Obstetric Society of Vienna on May 16, 1905,[25] proudly states that 80 operations of this kind have been performed since 1897, Deuhrssen, in a paper published December 4, 1905,[12] was able to draw his conclusions from 115 cases recorded up to the time of the writing of the article. He found in these 115 cases but 6 cases of death, this number including one chloroform death, one patient who died of typhoid fever, another of septic thrombosis, this last patient having been in a septic condition when brought to the hospital. (The mortality of symphyseotomy still remains above 10 per cent!)

Pubiotomy is generally pronounced an operation practically free of danger if performed *lege artis*, and thus one cannot be surprised to see the question seriously considered whether pubiotomy is not preferable to artificial premature birth in cases of slighter pelvic contraction. Doederlein considered the operation, or at least the introduction of the Gigli saw around the pubic bone, harmless enough to suggest its prophylactic introduction in doubtful cases. If in the course of labor pubiotomy seems indicated the bone then can be cut within a few minutes. This prophylactic application of the saw has been adopted by several obstetricians and is highly recommended by Reeb[9]. Duehrssen is inclined to believe that pubiotomy could be safely performed by the general practitioner. (I shall later have occasion to show that Duehrssen does not consider the general practitioner capable to use the Bossi dilator, so that the very interesting deduction can be drawn that in the opinion of Duehrssen pubiotomy is an easier operation than the application of the Bossi dilator. This certainly seems an exaggerated favorable opinion concerning pubiotomy.)

The instrumentarium, the technique and the after treatment of pubiotomy are simple. General anesthesia is not absolutely necessary, local anesthesia may be of considerable help. (Bonardi's first pubiotomy on the living was performed without anesthesia).

Before I close the review of these most important contributions of the past year on this subject (I found thirty-one different articles, and this number certainly does not include all the papers published), I wish to call the attention of the reader to some divergence of opinion concerning the proper name of this operation. Pubiotomy, or as some write it pubeotomy or pubotomy (Baumm), is the historical name as first suggested by Champion, Stoltz and Galbiati. Gigli introduced the term Lateral Incision (Lateralschnitt) which is employed by many of the German writers. Van de Velde objected to the hybrid word pubiotomy, which is half Latin and half Greek and proposed Hebotomy as the correct Greek term. French writers seem to favor this

name. Duehrssen suggests a general acceptance of the term Gigli's Hebotomy, which would be both correct and just.

Bossi Dilator. The artificial dilatation of the cervix during pregnancy and labor was one of the two subjects presented for discussion before the last Congress of the German Gynecological Society in Kiel in June, 1905.[27] The two opposing views very clearly stated in the "Referate" prepared for the congress by Leopold and Bumm, Leopold advocating the quick dilatation with some such instrument like the Bossi dilator, Bumm contending that all steel dilators are dangerous, and that the incision of the cervix undoubtedly is the preferable mode of procedure. Both essayists found supporters of their respective views among the large number of more or less prominent obstetricians who joined in the discussion. It would seem that the majority of the speakers were in favor of the Bossi instrument, because this instrument can be used by the general practitioner without trained assistance. This point is of considerable interest in connection with the simultaneous efforts of Duehrssen to fight the Bossi dilator just on this ground. Duehrssen[28] published a paper bearing the title: "Is it permissible to recommend the Bossi method to the general practitioner?" He emphatically answers this question in the negative. The manifold dangers of the method are described with much detail. But that this article contains a good deal of exaggeration, garbling of references and bad reasoning, is plainly shown in a paper of Lichenstein[31] written in defense of the Bossi method. In Duehrssen's opinion the Bossi dilator is superfluous after the obliteration of the cervical canal and is a decidedly dangerous instrument before its obliteration. The dilator, he contends, can be applied without undue risk to the patient only by the specialist. For the specialist, however, vaginal Cesarian section(after Duehrssen) must always be the preferable procedure. The general practitioner must be encouraged to use the colpeurynter. This recommendation of a more extensive employment of colpeurysis, or as it more appropriately should be called metreurysis, can be heartily endorsed. The general practitioner does not seem sufficiently acquainted with this comparatively safe and reliable means of quick dilatation of the cervix. Many of the speakers at the congress in Kiel dwelt upon the various advantages of metreurysis. One of the chief arguments commonly used against the Bossi dilator is the danger of a deep laceration of the cervix leading immediately to a serious hemorrhage and later to troubles of a gynecologic nature. This latter point was first emphasized by Bardeleben[29] and his paper has been quoted by every opponent of Bossi. Lichtenstein[30] in a recent paper seems quite successful in demonstrating that the adverse opinion of Bardeleben is void of any justifica-

tion. The proceedings at Kiel are critically reviewed by Sir Sinclair[32] in an article which he concludes with an expose of his own opinion in the matter. He undoubtedly is very conservative. He repudiates both the steel dilator and the cervical incisions,and claims that for earlier stages of pregnancy laminaria and the graduated dilators of Hegar, for later stages the colpeurynter proves sufficiently effective.

Cesarian Section in Placenta Previa. In a well arranged and well written article Holmes[33] proves once more that Cesarian section is an "Improper Procedure" in the treatment of placenta previa. The literature on the subject is thoroughly reviewed, the article containing 103 references. The writer, for reasons unknown to us, has, however, failed to include in his otherwise very complete list of references the following article: H. Ehrenfest. The Impropriety of Cesarian Section in Placenta Previa, published January 11, 1902, in American Medicine. In this paper I have 3 years ago arrived at conclusions which are practically identical with those of Holmes.

Intracranial Hemorrhages of the New Born. Harvey Cushing in a recent paper[34] made some generalizations in regard to the propriety of operative measures for certain maladies of neurological interest, that are commonly considered beyond therapeutic aid. Among other conditions the cerebral palsies of children were cursorily reviewed. In response to many inquiries for details Cushing amplifies the original short paragraphs in a special paper[35] which in my opinion ranks high among the contributions of the last year to medical literature, and cannot fail to arouse the interest of every obstetrician.

A few years ago, when making observations on the circulation of the cerebro-spinal fluid, he studied a number of infants who had been stillborn, or had died during the early hours or days of life, and found to his surprise, that a considerable percentage of them had died with an intracranial hemorrhage. The idea suggested itself that at least in some of these cases the hemorrhage must have played some part in the asphyxiation recorded in the clinical histories. The situation and distribution of these hemorrhages make surgical interference feasible, if we can find symptoms which in an early stage permit the diagnosis of the presence and the location of the clot. Judging from his own experience the writer thinks that the condition need not be difficult of diagnosis. A lumbar puncture may be of value in doubtful cases, since the presence of red blood cells in the lumbar meninges will prove an effusion of blood into the subdural space. The history of labor, of course, is all-important, also the degree of post partum asphyxiation. The condition of the fontanelle, convulsions especially if unilateral, ocular conditions, etc., may furnish

enough subjective symptoms for the diagnosis of an initial lesion. In its fully developed and terminal aspects the disease is better known, especially to neurologists as: spastic palsies, blindness, deafness, feeble-mindedness, complete amentia. And there is one more serious sequel, which according to Gowers occurs in two-thirds of all cases, and accompanies the mildest grades of the disease—this is epilepsy. The article contains the detailed histories of four craniotomies performed by the author on new born infants. Two of the babies died, but in the two others the success was so striking, so complete, that no fair minded reader can help being impressed by this ingenious suggestion of the writer to bring help to infants who are condemned to a dreadful existence, if they unfortunately escape immediate death.

Physiology of the Placenta. A very exhaustive consideration of our present knowledge of placental function with the addition of a number of interesting and valuable new findings can be found in a monograph of J. Hofbauer, entitled: The Biology of the Human Placenta.[36] The main objects of his studies are the metabolic processes occurring within the placenta. In that part of his book, which he calls the biochemic, he arrives at the conclusion, that the placenta represents the organ of assimilation for iron, albumen, fat and oxygen. The cells of the chorion-epithelium contain ferments which both by means of simple surface contact and by diffusion act upon the corpuscular elements of the maternal blood. The elements transformed by the action of these enzymes are assimilated by the epithelium. The chorionic villus in its biologic function thus resembles closely the villus of the intestinal mucosa, with the only difference that the latter obtains the active ferments from glands, while the chorionic villus contains them within its cells.

Hofbauer proves the existence of placental ferments by the presence in the placenta of albumoses which cannot be found either in the maternal or fetal blood.

Bergell and Liepmann[37] endeavor to establish the existence of enzymes in the placenta by a more direct method. They produced an extract of placenta and observed its fermentative action upon certain substances. In this way they ascertained a diastasic, a glycolytic and a proteolytic ferment. Basso[38] concludes that the placenta must contain enzymes, because he was able to observe autolytic processes in this organ. Bergell and Liepmann, however, believe that while suggestive this observation is not absolutely conclusive, since such autolytic processes are typical for many organs. In studying the transition of fat from mother to fetus Costa[39] could exclude a direct passage

of neutral fats through the placenta and was forced to the conclusion that they pass in the form of soaps. The chorionic villi transform these soaps back into neutral fats. Charrin and Goupil[40] while not denying the function of the placenta as a gland with an internal secretion apparently consider its chief action in being a filter, which retains substances dangerous to the fetus. If certain investigators of the etiology of eclampsia have found the placenta to contain toxic substances and then have concluded that these toxins originate within the placenta, they make, in the opinion of these writers, the great mistake of forgetting of the filter action of the placenta.

A paper of unusual merit and interest is that of Halban[41] on the influence of internal secretion of the placenta upon lactation. From very ingenious theoretical considerations and exact clinical observations Halban concludes that only the placenta (and not the ovaries) could produce those substances which when entering the maternal system give rise to the typical changes occurring in certain organs in the course of pregnancy and the puerperium. He selected as the most suitable object for his investigations the breasts as the organs whose function can be best observed. In reference to the breasts his theory is the following: The placenta furnishes the formative impulse. Cessation of its biologic function causes retrograde processes in the mammae. Lactation is the first symptom of the beginning atrophy.

In a discussion before the Vienna Society of Physicians Kreidl and Mandl[42] showed some hesitation in accepting this theory in its entirety. Mandl based his arguments upon the results of very interesting experiments made on pregnant animals. He opened the abdomen, killed the feti within the uterus and replaced the pregnant uterus. From 2 to 4 days later the breasts of these animals discharged milk. These experimental observations are well in accord with a few records in literature of cases in which an entirely unexpected beginning of milk secretion became indicative of the sudden death of the fetus. This phenomenon has been observed both in uterine and extrauterine pregnancy, and it has been suggested that this symptom could be regarded as indicative of the interruption of an ectopic pregnancy. Halban in defense of his theory argues against Mandl that the secretion of milk is the result of a "biologic" separation of the placenta from the mother and that therefore the intrauterine separation and destruction of the placenta, as produced by Mandl, and its actual expulsion during labor are identical proceses in their biologic aspects.

Of some interest in the question of the physiologic function of the placenta may prove a paper of Fossati[43] in which he describes a fine

nervous reticulum in the placenta which occupies the central and peripheral portions of the villi. The nerve fibres penetrate into the superficial epithelial cover of the villi and thus this observation may be regarded a valuable additional proof for the fetal origin of the chorion-epithelium.

Eclampsia. Whenever in the history of medicine speculation, experimentation, or an accident has lead to a new theory which seemed generally applicable, for obvious reasons an attempt has been made to explain by this theory facts, which heretofore have been inexplicable. With these words Labhardt[44] begins a very clear and comprehensive critic of the various biologic theories of eclampsia, based upon Ehrlich's theory of immunization. The numerous biologic theories of "The disease of theories" as eclampsia is called by Zweifel, can be divided into three groups: a.) *Veit's Hypothesis.* Placental tissue is deported into the maternal system and there leads to the production of a toxic substance. If suddenly a large amount of placental tissue is thrown into the maternal blood, an excessive amount of these toxins is formed, which cause eclampsia. b.) *Ascoli* goes one step further . Foreign substances introduced into the blood immediately cause the production of neutralizing, antitoxic bodies, known as lysins. If placental tissue—as a rule it is only syncytium—reaches the maternal blood, syncytiolysins are formed. An excessive amount of syncytiolysins in Ascoli's opinion cause eclampsia. c.) *Weichardt* extends Veit's theory. As the result of the dissolution of the syncytium, carried into the maternal system, syncytiotoxins are formed which under normal conditions are neutralized by antibodies, under pathologic conditions they poison the mother and produce eclampsia.

In discussing these theories Labhardt acknowledges the fact that during pregnancy chorionic elements, usually only syncytium but at times whole chorionic villi, are deported into the maternal blood. It is undeniable that emboli formed by such deported placental tissue are more commonly found in eclampsia, as has been ascertained by Schmorl.[45] But, of course, it could be argued that this apparent increase in the number of emboli consisting of chorionic elements may not be the cause but the result of the eclamptic convulsions. The largest number of placental tissue emboli has been found by Schmorl in two cases of very early abortion. If this deportation of tissue is so common in abortion, and if this deportation is of paramount importance in the etiology of eclampsia, it will be difficult to explain why eclampsia is so extremely rare in early abortion.

Labhardt hesitates to accept the far reaching deductions of Weichardt. We are still in complete ignorance concerning those toxins produced by the introduction of placental tissue, but Weichardt al-

ready bases theories upon an insufficient production of antibodies against these toxins. Of course any theory footing upon Ehrlich's hypothesis assumes that the syncytium exhibits toxic qualities in contact with the maternal blood. The question comes up in this connection whether syncytium is maternal or fetal tissue. It is obvious that any positive proof that it is of maternal origin would explode all the biologic theories of eclampsia. It seems that at present practically all investigators agree that syncytium is fetal tissue, but a few writers still dissent, e. g., Pfannenstiel in Winckel's Handbuch der Geburtshilfe[46] or Sfameni[37]. Granted that syncytium is fetal tissue, Ehrlich's theory is applicable to an explanation of eclampsia only if fetal tissue is heterogenous to maternal tissue, th. i. acts upon maternal blood like the blood of another species. This claim has been actually made by Dienst in a paper of which I shall speak later. There do exist chemical and biological differences between the blood of the mother and the fetus, but after all the fetus develops from a maternal ovicell. Of course the fetus also contains an admixture of paternal tissue, but it seems just as difficult to assume that man and woman belong to different species.

If only the detached and deported syncytial tissue is capable of developing toxic qualities, then it must be assumed that it is chemically different from the living syncytium which covers the chorionic villus. How could such a difference be explained? Hardly by changes in the nutrition of the dead detached tissue, because in this respect it certainly resembles the conditions existing in the sycytium of a dead ovum, and it is well known that eclamptic convulsions often suddenly cease if the fetus dies. It is held by some writers that the comparative frequency of eclampsia among primigravidae can be explained by an active immunization of the multigravidae acquired during preceding pregnancies. Guilemi[48] explains in this manner the rarity of recurrence of eclampsia in the same patient. If this is true the blood of multigravidae *a priori* must contain a certain amount of syncytiolysins. But why do these lysins not manifest themselves during pregnancy in a destructive action upon the chorionic villi? The deportation theory fails utterly in explaining cases of typical eclampsia occurring several days after labor. There is one more observation which seems to deprive all the biologic theories of one of their main foundations. Large quantities of placental tissue are dissolved and completely resorbed in all cases of unoperated ectopic pregnancy, but eclampsia is practically unknown in ectopic pregnancy.

A careful perusal of Labhardt's paper enables one to gain a rather clear conception concerning the present status of these biologic theories of eclampsia. Many of the arguments used by him in the attempt of discrediting these theories are good. But the problem is complex, new observations, new detections are recorded daily, new

hypotheses are propounded at a fast rate, and soon some of the good arguments of Labhardt will be all wrong. This is already true for some of them, e. g., those referring to the deportation of placental tissue. Dienst[45] in discussing the ultimate fate of emboli formed by chorionic elements repudiates the views of Veit and claims that the deportation of villi into distant organs, or even the simple detachment of villi, as described as typical occurrences by Poten, are not physiological but distinctly pathological processes. But an actual deportation of placental tissue is not any longer essential in some of the latest biologic theories of eclampsia. Halban[49] believes that the eclampsia toxins originate in the placenta as products of a secretory action of the chorion epithelium. Colorini[50] found in the placenta of eclampsia patients an abnormally large number of syncytial buds. In his opinion eclampsia is caused by an excess of internal secretion from these buds. These syncytial excrescences may become detached and may be carried as emboli into the maternal organism, where they continue their secretory function. Liepmann[51] finds the eclampsia toxins right in the placenta. He transformed dried placenta into a powder which he injected into the peritoneal cavity of rabbits. All animals died with the distinct symptoms of intoxication. (Confer a paper of Charrin and Goupil on the filter action of the placenta, mentioned in a preceding paragraph.

An entirely new eclampsia theory has been propounded by Dienst.[52] He suggests that eclampsia results from the transgression of fetal blood into the maternal blood as the result of a leakage in the placenta. By injecting certain fluids through the umbillical vessels both into the shed placenta of eclampsia patients and into the still adherent placenta immediately after the expulsion of the fetus he was able to demonstrate that in the majority of instances the integrity of the epithelial covering of the chorionic villi was disturbed. The eclampsia toxins are the result of the direct action of the fetal upon the maternal blood. Dienst's theory, as has already been pointed out, is based upon the assumption that fetal blood is heterogeneous to maternal blood. Liepmann[53] vigorously repudiates such an assumption and actually induced Dienst to modify his original theory.[54] Mathes[55] cannot agree with either Liepmann or Labhardt[44] that the assumption of a heterogenety between fetus and mother is such an absurdity as they claim it to be. That the embryo, as the product of the ovicell, may be at least to a certain extent heterogeneous (artfremd) is well in accord with the experiments of Metalnikoff who found such a condition existing between spermatozooa and the animal that furnished them. By injecting spermatozooa into the animal he produced specific antibodies. This idea of a sort of heterogeneity between fetus and mother seems also perfectly in accord with Weis-

mann's theory of the continuity of the germ plan and with the fundaments of Haeckel's biogenetic theory.

Complete reviews of all the various chemical and biological theories of eclampsia can be found in a "Sammelbericht" by Mathes[56] and in a paper of Sikes on the "Pathology of Eclampsia in the Light of Recent Work"[57].

Amniotic Fluid. Experimentation upon animals and certain clinical observations have a long time ago established the fact that the amniotic fluid is chiefly a transudation from the maternal blood. It is extremely probable that only in later stages of pregnancy fetal urine is secreted and voided into the amniotic sac. This conception of the origin of the amniotic fluid has of late been confirmed by investigations of Gruenbaum[58] into the respective moleculary concentration of maternal and fetal blood. It was suspected that the epithelial covering of the amnion may play an important part in this process of transudation and Mandl[59] has now actually succeeded in demonstrating distinct morphologic peculiarities in the amniotic epithelium which do not permit any doubt concerning the active function of this epithelium in the production of the amniotic fluid. Bondi[60] simultaneously but independently from Mandl made studies in the same direction and came to identical results. Polano[61] who a few years ago as the result of biologic investigations has advanced the theory of such an excretory action of the amniotic epithelium is convinced of the reliability of Mandl's and Bondi's observations and their interpretation.

Carcinoma. An attempt to sketch the present status of the cancer problem—of course only as far as uterine cancer is concerned—seems a hopeless task. The widely different opinions of the numberless workers in the field find their expression in an immense literature, a complete consideration of which is impossible within the limits of this review. Only a few of the most noteworthy papers can be selected. It is obvious that this selection of necessity is influenced by my personal views concerning the problem, but I shall endeavor to also quote unbiased the opinion of writers with whom I cannot agree.

The literature of the past few years has abounded with articles pertaining to Wertheim's radical abdominal operation. Some writers were enthusiastic, others rather sceptical, and very conservative observers warned both sides and suggested to wait quietly until the test period of five years had passed for a number of these operations, sufficiently large to permit reliable conclusions as regards the curative effect of these undoubtedly dangerous operations. These five years have ended and the situation seems discouraging. Wertheim and shortly afterwards Mackenrodt and Amann and a few others had begun their fight for extended radicalism in cancer operations by claiming the necessity of a systematic and complete removal of all

lymphglands and lymphvessels connected with the uterus. The physical impossibility of such a plan of action was soon recognized, and the demands were reduced to a removal of the parametrium and of certain groups of lymphglands, as a rule including all the enlarged or palpable ones. In my review, published last January, I could state that the accent seems to lie on "parametrium". In 1905 the systematic search for lymphglands has met its Waterloo, and everybody seems clinging to that last straw—the parametrium. In 1904 Wertheim[62] announced that the carcinoma has recurred in every one of his patients in whom the lymphnodes were found involved at the time of operation. The effect of this statement is in my opinion most distinctly expressed in the sudden change of position of such men as Sampson or Werder. Only a few years ago Sampson devised a method of resection and implantation of the ureter in order to enable a complete eradication of the uterus together with all the lymphglands and the connective tissue within the pelvic cavity. To-day he[63] writes: "We must concede that the percentage or cases which we can cure by the removal of the pelvic lymph nodes, if they are involved by cancer, is small, so small that it may be more than offset by the increased primary mortality which is incident to prolonged operation. I believe, however, that if at the close of the local operation the patient is in good condition, that the removal of the easily accessible (*sic!*) iliac lymph nodes is indicated, for it is of prognostic value any way and is undoubtedly of some curative value in a small percentage of cases." Werder[64] begins an article just published with the justified claim that the priority for that radical operation, which to-day goes under the name of Wertheim's abdominal methods, belongs to him, and concludes this same article with an endorsement of the vaginal route which has of late been adopted by him. Of course, vaginal route always means disbelief in the value of an extirpation of lymph glands.

How unsettled conditions are can be seen from the trend of opinion as expressed at the last year's meetings of such representative bodies as the American Gynecological Society, the German Society of Gynecology and the Gynecological Section of the British Medical Association.

The question whether to operate *per abdomen* or *per vaginam*, or in other words, whether to completely disregard the glands, seems settled for the American gynecologists. At Niagara Falls[65] a symposium was held on the subject: "Abdominal versus Vaginal Operation in Uterine Cancer," but the more appropriate title it seems would have been: "The Vaginal Operations." All speakers concurred in the advantages of the vaginal route and not one seemed to have to say very much in favor of laparotomy. In Kiel[27], on the other hand, very little doubt was left that the German gynecologists, who in general

more often than the Americans and for more various purposes operate through the vagina, at present consider the abdominal route the only one adapted for dealing with uterine cancer. Certainly there still are some prominent Germans in favor of the vaginal operations, e. g., Olshausen, or Kuestner and Doederlein at least for corporeal cancer, but they are decidedly in the minority.

In Leicester a good number of the British gyneoologists seemed to prefer the vaginal route, while the guests present at the meeting, Wertheim of Vienna and Kelly of Baltimore, spoke in favor of the abdominal methods.

This difference of opinion is, as Ries in a signed editorial[66] rightly states, the more surprising as it is seen that the essayists of the American meeting based their conclusions almost exclusively on the statistics resulting from the work of the very same German investigators who therefrom drew just the opposite conclusions. It seems to me that the conclusions of the American gynecologists are not altogether illogical. The search for lymph glands undoubtedly proved a failure, and in this way can be construed as a weighty argument in favor of the vaginal route. The Germans, on the other hand, are optimistic and are not yet ready to give up hope. At Kiel the question was thoroughly discussed whether the results so far obtained justify a further development of the so-called radical abdominal operations. Although discouraging to a certain extent the abdominal methods, in the opinion of most speakers, still justify the hope that ultimately they will yield better results than the vaginal operations. Wertheim made this point in Leicester and advanced some figures which seem to vindicate his persistence. Baisch[67] in considering the lymph gland questions concedes the discouraging features of Wertheim's experience. But he does not believe that the abdominal operations can be fought, as is done by some, solely on the lymph gland issue. Abdominal operations offer a better protection against injuries of the ureter and Schuchardt's vaginal operation, the only type of vaginal operation which can be considered to-day, entails too great a loss of blood. Doederlein[68] does not give up hope that better results will be obtained with the extirpation of lymph nodes. He removes only the enlarged, palpable ones and makes, as first suggested by Kroemer[69], the removal of the glands the first step of his operation. In a similar manner Pollosson[70] proceeds.

One of the most notable papers of the year is that of Mackenrodt[70] in which he describes his hypogastric laparotomy for the extirpation of the carcinomatous uterus, his assistant Brunet[71] reporting on the results of this operation. Mackenrodt does not feel discouraged by the experience of Wertheim. He believes that the one essential feature of a radical operation for uterine cancer is the thor-

ough extirpation of the parametrium. And this undoubtedly can be better achieved by his than by means of Wertheim's operation which always leaves stumps. Mackenrodt removes together with the uterine and pelvic parametrium and the paracolpium also the roots of the broad ligaments by carefully dissecting them off from the lateral and posterior pelvic wall, the sacrum and the rectum. Access is gained to the pelvic cavity by means of his *laparotomia hypogastrica* consisting in a curved transverse incision reaching from one to the other superior anterior iliac spine. Very excellent illustrations elucidate the very clear description of the various steps of this operation.

There is one feature in Mackenrodt's technique which must be especially emphasized, namely the preparation of the patient for operation, by first removing the cervical growth with a sharp curette, escharizing the wound and finally packing the vagina with a strip of gauze soaked in a ten per cent. solution of formalin. This gauze strip is introduced about 24 hours before the operation. Mackenrodt emphasizes that if this formalin packing is kept in the vagina longer than one day, it is liable to produce an edematous infiltration of the connective tissue within the pelvis which will interfere with operation. These formalin packings in the opinion of Bumm[72] are likely to improve the primary results of the abdominal operations by guaranteeing a better asepsis. They were also favorably spoken of by Howard Kelly at the meeting of the British Medical Association.

The paper of Brunet[71] may serve as a good example of an excellent clinical report as usually furnished only by German clinics. If clinical material is so closely studied in all its aspects, the conclusions drawn from such observations are worth our attention. In a total of 70 cases in 30 instances metastases were found in the vagina, and thus it should be accepted as a rule to extirpate the upper third of the vagina in every case of cancer affecting the lower portion of the uterus. While loose under normal conditions the connective tissue between bladder and uterus in many cases of uterine carcinoma is found firm and dense, due to either an inflammatory or cancerous infiltration. This fact explains the comparative frequency of injuries of the bladder in radical operations. Brunet confirms by exact histological investigations the contention of previous writers that small carcinomatous metastases in lymph nodes may disappear spontaneously. In this connection attention must be called to a paper of Koblanck[80] which deals with the participation of bladder and ureter in carcinomatous processes. He also believes that injuries of these organs during operation to a large extent are caused by the extension of the cancer to these organs. Zangemeister[81] shows how such an affection of the bladder can be recognized by a cystoscopical examination and may help in the decision concerning the operability of the special case.

Of course, nothing can as yet be said about the permanent results of the Mackenrodt operation. For the next five years this operation will be safe against attacks. It can easily be seen, how this generally accepted test period of five years thus protects the inventor of a new cancer operation and also retards the development of the operative treatment of uterine carcinoma. If the advantages of a new method are not very striking, its exploitation for the first five years often practically remains in the hands of its inventor, and this is decidedly undesirable. This will possibly prove true for a new method of Latzko[73]. He believes in the advantage of a systematic removal of all lymph-glands, but realizes that none of the known operations does permit such a removal, he, therefore, devised a new operation by means of which he extirpates uterus and parametrium together with the external and internal iliacal, hypogastric and deep lumbar glands. Mackenrodt e. g., in order to test his operation performed it of late on all his patients, but not because he was dissatisfied with his former igniextirpation, as some writers seem to believe. Mackenrodt begins his paper on the hypogastric laparotomy[70] with a final report on his vaginal thermocautery operation, and emphasizes that as far as permanent cures are concerned this operation still stands unsurpassed by any known cancer operation. This statement was certainly unknown to Ries, when he in the editorial, already quoted, facetiously wrote: "What is the use of talking of igniextirpation *per vaginam* when the father of the method has abandoned it in favor of the abdominal work?" Ries's remarks, as can be easily seen, refer to a paper of Gellhorn[74] in which for theoretical reasons he defends a vaginal operation with Schuchardt's paravaginal incisions, the whole operation being performed with the actual or the thermocautery. I say "theoretical reasons" because it seems to me that these reasons will be "practical" only when we shall possess the mortality percentage of this particular operation. It is not entirely fair to base all deductions, as Gellhorn of necessity does, on the mortality percentage of the plain Schuchardt operation in the hands of such expert vaginal operators, as the inventor of this operation, or Schauta. I believe that Gellhorn is fully justified in claiming that igniextirpation combined with the paravaginal incision must be expected to yield results equal to those of any of the radical abdominal operations. This operation, however, can not be recommended for general use without depriving it of its one great advantage over abdominal operations, namely its lower immediate mortality. A Schuchardt operation is a decidedly difficult operation and should be attempted only by a man who is thoroughly familiar with vaginal methods. Werder's views[64] are practically identical with those of Gellhorn and are undoubtedly influenced by the latter. But Werder, like most of the defenders of the vaginal route in Niagara Falls, does not

lay enough stress upon the fact, that to-day by vaginal operation for cervical carcinoma only the Schuchardt operation can be meant, because only this operation permits a thorough removal of the parametrium, and the complete extirpation of the paremetrium is the one thing to which we at present have to pin our faith. The whole parametrium question is clearly set forth by Pankow[75] in a very interesting paper which has just appeared. An infiltration of the parametrium is by most authorities considered a strict contraindication against operation, but he shows that we have no means of discerning before the operation between an inflammatory and a cancerous infiltration. His point, that we undoubtedly very often mistake an inflamed for a carcinomatous parametrium, refuse to operate and thus condemn a patient to death, is well taken, and cannot fail to appeal to every physician. He seems well justified in proposing to perform an exploratory laparotomy in every patient who seems able to stand such an operation. If the case by inspection and direct palpation is found to be inoperable, at least a prophylactic operation such as the ligation of arteries could be performed to the advantage of the patient. Pankow's paper is in my opinion one of the most forceful arguments in favor of a routine abdominal operation. Of course, for certain cases e. g. a beginning cervical cancer in a very stout patient, or possibly for all cases of cancer of the *corpus uteri* (Doederlein) the vaginal route will remain preferable. Vaginal hysterectomy is considered by Condamin[82] the ideal method for the extirpation of the pregnant carcinomatous uterus up to the sixth or seventh month of pregnancy. But the future seems to belong to the abdominal operations.

All the German gynecologists have adopted a uniform mode of calculating the percentage of permanent cures, so that a direct comparison of their results, as expressed in their "absolute Heilungsziffer," is both possible and feasible. From such a comparison one can deduce two very evident facts: 1, that the percentage of permanent cures is steadily increasing; 2, that the percentage of those cases which by the various gynecologists are considered still within the limits of operability, is also steadily growing. Thus Pankow reports that in the clinic of Professor Kroenig of Freiburg at present 87 out of every 100 cancer patients seen in the clinic are regarded suitable for a radical operation. Both these facts are by most writers explained by the improved methods of operation. If we, on the other hand, consider the evident failure of the lymph gland problem, which undoubtedly discredits the efficacy of all the later radical abdominal operations, this explanation does not any longer seem satisfactory. I feel encouraged in my belief, for which, however, statistical proof hardly can be furnished, that this undeniable increase in the percentages of operability and permanent cures, to a very large extent is due to the fact, that both the physician and the lay public do know more about the earlier symptoms of uterine carcinoma, at least in Germany. Thus

Winter's suggestion for a satisfactory solution of the cancer question still holds good: Early diagnosis and early operation! If performed early the operation does not need to be one of the dangerous type. Spencer[83] records three permanent cures after high amputation of the cancerous cervix during pregnancy, and Vassmer[84] advances reliable proof that an incipient carcinoma can be permanently removed by a curettment.

The literature records attempts made to bring help to those, whose cancer has recurred after an operation or to those, to whom no hope of cure not even by means of a dangerous operation can be held out. Doederlein and Rosthorn[73] have extirpated recurrent growths, the latter claiming that the prognosis for recurrences in the connective tissue is somewhat better than for those in glands, the latter always necessitating more complicated operations.

Doyen's cancer serum does not cure cancer, as claimed by its inventor, according to the report of a special committee appointed for the purpose of investigating its efficacy. That, however, a great deal can be done to relieve the sufferings of the incurable patients and to actually lengthen their lives is shown in an exhaustive treatise of Recamier[77]. This monograph contains a record of satisfactory results obtained with nerve resections in cases of excruciating pain. The prophylactic operation consisting in the ligation of the uterine arteries, is highly spoken of by De Ronville[76] who quotes the reports of thirty-two cases collected from literature. The treatment of advanced cases is considered by Bovee[78] and Chrobak[79] who points out the responsibility of the community to make the life of the incurable patients bearable by providing special sanitariums.

Myoma. The reasons for the almost sudden change of time honored conservative ideas concerning uterine myoma into the extreme radicalism of the last few years are easily found in the improvement of the technique and the results of myoma operations, and in the eagerness of many writers to enumerate the manifold dangers of uterine myomata. They consist in simple degeneration, in transformation into malignant newgrowths, in impairment of the general health of the patient by affecting the heart, the function of the kidneys and so on. The term cachexia, which usually is applied only in connection with malignant tumors, is today surprisingly often used in speaking of the general effects of uterine fibroids. If some writers plead for the extirpation of every myoma immediately on diagnosis, they apparently do not believe in a very marked clinical difference between carcinoma and myoma. Such a view certainly is exaggerated, and we see with satisfaction that the pendulum begins to swing backwards from this extreme radicalism.

Baldy[85] does not believe that degenerations are so extremely common. He contends that Noble's estimate, that 16 per cent. of 1,188

patients would have died without an operation because of degenerations in the tumors, is pure guesswork, and consequently too inexact to be accepted as a fact. Baldy denies Noble the right to claim that the mortality of early operations for uterine fibromyomata is about 1 per cent. Two hundred and forty-eight patients have been operated by himself within the last ten years with a mortality of 8.4 per cent. in the total number and of 2.85 per cent. in the last 105 operations.

Nevertheless Baldy believes like Noble that every fibroid should be extirpated on diagnosis, but "not from any fear of degeneration" but because "fibroid disease of the uterus is not a local disease alone, but the process is practically a general one in that it involves in one way or another organs, how many and to what extent and how early we are unable to tell." The argument given in this last sentence certainly is not very clear, but Baldy also does not pay enough attention to the fact that Noble speaks only of the mortality of "early operation," as a whole this paper must be regarded a rather weak attack upon the views of Noble and his supporters.

From a study of 210 cases treated surgically Clarence Webster[86] concludes that the widely held view as to the comparative harmlessness of uterine fibroids needs to be greatly modified. These new growths positively increase the morbidity and mortality of those women in whom they occur. He apparently agrees with the opinion "held at the present time by the majority of gynecologists" that all large or growing tumors or small ones, which cause troublesome or serious symptoms, should be treated surgically. Supravaginal amputation is accepted by him as the routine operation, although he cannot deny that in consideration of the comparative frequency of an association of malignancy with fibroids the total extirpation is the more scientific procedure. Davis[87] feels justified in definitely advising against operation only if the fibroid does not cause any untoward symptoms in a woman nearing menopause, or past it, and is positively convinced that the tumor is distinctly atrophying. I think, in practice this is identical with operation on every tumor. Good reasons for early operation are advanced by Dobbert[88]. Early operations are easier, have a decidedly smaller mortality and more often permit the preservation of the uterus. But he emphasizes that he does not want to be understood as recommending operation in every case.

A most satisfactory consideration of the scientific aspects of the various indications for operation is found in a long article of Winter in the "Festschrift fuer Olshausen."[89] and in two shorter papers by the same author[90 91]. He wants operation limited to those cases in which distinct disturbances are caused by the presence of a uterine fibroid. He operated on 45 per cent. of all myoma patients seen by him. The indications for operation arranged according to the frequency with which they necessitated interference, are given by him in

the following order: First, hemorrhages, secondly, pain, thirdly, bladder troubles. Fibroids undoubtedly have an unfavorable effect upon the heart muscles and sometimes cause changes in the cardiac valves. Such affections of the heart also constitute an important indication for surgical interference. He emphasizes that myomas strikingly often demand operation just during the menopause[91]. This point seems of special interest because very many writers still believe in the favorable influence of the climacterium upon a myoma. Mackenrodt[93] points out the danger of this prevalent view while demonstrating before the Gynecological Society of Berlin a case of sarcoma in a woman 75 years old. A myoma was observed in this patient for the last twenty years and the tumor during all this time apparently did not grow. In a paper of Martin[93] on the indications for operations menopause plays an important role. He accepts supravaginal amputation as the routine treatment of all fibroids presenting symptoms in women under 45 years, and finds uncomplicated tumors of medium size suitable for such treatment as galvanism and ligation of the arteries. Interesting in connection with the still advocated extirpation of the ovaries as a prophylactic operation in cases of large myomata, is a report of Bovee[94] of four new cases (others are quoted by him from the literature) in which a uterine fibroma developed subsequent to a bilateral salpingo-oophorectomy. Haultain[95] considers a hysterectomy indicated in the majority of interstitial and submucous fibroids which give rise to symptoms and reduce a woman's health, comfort and usefulness. But when no symptoms are present, no treatment is necessary and "it is unwise to tell the patient that the condition exists." We do not agree with the last part of this rule. Such a practice is dangerous for more than one reason.

The preceding reviews in my opinion prove that the adherers of extreme radicalism at present are in the minority. But the word radicalism, like the word conservatism, in connection with fibroid operations, has two distinct meanings. We may understand by radicalism the advice to operate on every case immediately on diagnosis, and then logically have to apply the term conservatism to the principle, still defended by a few men, that our first attempt should be to leave the myoma alone or treat it without extirpating it. Engelmann[96] details the result of such conservative therapeusis in 1,400 cases. He describes the advantages of hypodermic ergotine injections, continued for a long time, of the Apostoli treatment and most of all of general hygienic measures. His views are very conservative. He does not claim any miraculous cures, but he forces the careful reader to acknowledge that satisfactory results may be obtained with such entirely conservative measures, and that certainly not every myoma demands surgical interference. Henkel[97], in tabulating the myoma patients seen in the famous Olshausen clinic of Berlin, exhibits the most

noteworthy fact that of 927 patients with a uterine myoma only 149 were subjected to an operation, i. e., 16 per cent., and it just so happens that Olshausen in going over the records of his private cases also found a percentage of 16 for the operated cases. Pincus[98], commenting favorably on the conservatism of Olshausen's clinic, emphasizes the great advantages of athmocausis in the control of hemorrhages from a myomatous uterus.

The other meaning of radicalism and conservatism respectively was created by the discussion among gynecologists whether the uterus should be removed or the operation on principle limited to the enucleation of the tumors. Conservative myomectomy is to-day less favored than a very few years ago. In a discussion before the Congress of German Naturalists in Meran[9]. Winter concluded an analysis of his personal experience with the statement that myomectomies give decidedly less satisfactory results than the radical operations and, therefore, the first mentioned operation must be reserved for carefully selected cases. Martin refused to accept Winter's arguments and defended his well known position in favor of conservative myomectomy. Kroenig, on the other hand, repeated his radical views, which are so clearly set forth in that new splendid textbook of operative gynecology of Doederlein and Kroenig[99]. Kroenig agreed with Winter concerning the necessity of a radical operation just when the patient is near the menopause. Graf[100] from a study of the cases of the Schauta clinic confirms Winter's opinion that conservative operations must be limited to definite indications. The results certainly do not justify the claim of certain writers that myomectomy should be the routine operation. The views of Deaver[101], as expressed in a paper just published, are practically identical. Myomectomy is suitable only in comparatively few cases. His operation of choice is supravaginal hysterectomy. Operation is performed only when the tumors produce symptoms. Alban Doran[102] is also in favor of supravaginal amputation with preservation of the ovaries. Essen-Moeller[103], however, obtained the best results with total hysterectomy. He was rather dissatisfied with myomectomy, believes, however, that the justification of this operation is established by the fact, that patients may become pregnant after this operation.

Very valuable contributions have in the last year appeared on the question of degeneration and complication of the uterine fibroids. The first place must be conceded to an exhaustive monograph of G. Piquand[104]. The same author utilized the immense material at his disposal for very interesting special articles on sarcoma of the uterus[105] and the complication of fibroids with carcinoma[106]. These papers deserve the attention of all gynecologists since they are destined to clear some of the obscurer views in the question of degeneration of uterine fibroids. The frequency of a sarcomatous degeneration is by the au-

thor estimated as 2 per cent. In considering the relation of myoma to carcinoma he thinks that the evidence shows that between 3 to 4 per cent of all cases of myoma are complicated by a carcinoma. A myoma seems to predispose the development of a carcinoma of the cervix. This must be regarded an important argument in favor of total extirpation against supravaginal amputation. The coincidence of myoma with a cancer of the uterine body is a not by any means uncommon occurrence. Piquand collected 179 cases of this kind. Since corporeal carcinoma is found 8 to 9 times more often in a myomatous than in a non-myomatous uterus, a further proof is furnished for the conclusion that myoma actually favors the development of a carcinoma. Piquand considers the frequency of the coexistence of a myoma and cancer a powerful argument in favor of immediate operation of every fibroid, especially if the patient is near the menopause. Cullen advanced the theory that myomata by interfering with the nutrition of adjacent tissues act as chronic irritation and that the latter plays an important role in the etiology of carcinoma. Goffe[107] demonstrated before the New York Obstetr. Society two uteri which in his opinion confirm Cullen's theory. Another very interesting case, which lends support to the irritation theory, is reported by Sehrt[108]. He found in the endometrium of a sarcomatus uterus circumscribed areas in carcinomatous degeneration. Toupet and Lebret[109] consider a sarcomatous degeneration of a myoma not particularly rare. They describe a case in which metastases were found in the lungs, an occurrence of extreme rarity. According to Lewis[110] sarcomas arising from uterine myomas are by no means common. Their frequency is variously estimated from less than one to 3 and 4 per cent. (Franque). Carcinoma is a more frequent accompaniment. The writer enumerates all the different etiological and accidental causes for the coexistence of these two new growths and also mentions the possibility of the extension of a carcinoma from a neighboring organ to a uterine myoma. A very interesting example of such an invasion of a uterine myoma from an ovarian carcinoma is described by Bauereisen[110].

Among the rarer complications caused by fibroids must be mentioned their complete detachement in the form of migratory fibroids, and intraperitoneal hemorrhages. Reuben Peterson[112] and Knott[113] consider in detail this peculiar phenomenon of a complete separation of a sub-serous myoma, probably as the result of a twisting and secondary necrosis of the pedicle. A most uncommon accident is a fatal intraperitoneal hemorrhage due to a rupture of large subperitoneal veins. A case of this kind has been recorded by Stein[114], and two others by Pollosson[115], who calls attention to the fact that the clinical picture of such an unfortunate occurrence closely resembles the rupture of an ectopic pregnancy.

In concluding this review of the literature on myoma short men-

tion must be made of a few papers dealing with the etiology of myoma. The frequency of pathological changes in the ovaries in cases of uterine fibroids is well known. Malcolm Campell[116] bases upon this fact a most peculiar hypothesis. He considers these changes in the ovaries to be primary. In his opinion such ovaries may produce a pathological internal secretion which acts on the uterus in such a way as to lead to an *irregular* and *asymmetric* hypertrophy of the tissues of the uterine wall. The source of this rather queer hypothesis is interesting enough to be quoted here. He develops his theory as a "striking parallel" to the theory of a suppression of ovulation during pregnancy. The energy thus conserved is during pregnancy expended in the production of an internal secretion, which leads to the *uniform* and *symmetrical* hyperplasia of the muscular tissue of the uterus. Internal secretion should not be abused in this manner! Henkel[79] also makes use of the internal secretion theory, but in a quite different way. In his opinion the ovarian changes are secondary. The hypertrophy and the increased function of these ovaries help to neutralize the action of certain toxic substances produced by the muscular tissue which newly forms under the stimulating influence of the imbedded myoma.

Pinard[117] while considering the causes which favor the production and the growth of fibromyomata of necessity discusses the relation of sterility to uterine myoma. Pinard believes that the absence of pregnancy predisposes and that pregnancy distinctly protects the individual against myoma. He claims that impregnation, in order to act as a real protection, must also be followed by all the physiological stages which constitute the complete function of reproduction. Thus abortion, or even a full term labor, if not followed by lactation, do not act as reliable safeguards. Late fertilization and voluntary sterility must be considered etiologic factors of great importance. "If you find a primigravida of over 30 years" writes this author, "*cherchez le fibrome.*"

Ovarian Tumors. A very ingenious theory concerning the etiology of hydatiform mole, the product of painstaking investigations and clever thinking, has collapsed. A few years ago it was recognized that the small cysts so generally found in the ovaries of cases of vesicular mole and also of chlorio-epithelioma belong to the rather uncommon group of corpus luteum cysts. This discovery was made at about the time when Fraenkel's theory of the influence of the corpus luteum upon the development of the fertilized ovum had proved a most fruitful field for scientific research. It was suggestive to look for an etiologic relation between hydatiform mole and the cystic degeneration of the corpus luteum occurring in this condition. An apparently very satisfactory explanation for this striking co-existence of these pathologic conditions in ovum and ovary was offered by Pick.

A majority of recent writers had just begun to accept Pick's theory as an established fact, when two publications, the one by Wallart[118], the other by Seitz[119], disclosed the utter fallacy of this interpretation. These two writers found that the hyperplasia of lutein substance and the formation of lutein cysts in atretic follicles are typical ocurrences in the course of every normal and abnormal pregnancy. Fraenkel[120] in a recently published paper makes some objections to Wallart's claim that in normal pregnancy as well as in vesiculat mole there exists an overproduction of lutein substance which is diffusely distributed in the ovarian tissue. Fraenkel emphasizes that we define a lutein cell as an epitheloid cell which contains a yellow pigment and lies in a corpus luteum. It is true that during pregnancy certain cells in the ovarian stroma enlarge and do contain some pigment, but it seems unjustifiable to pronounce them lutein cells, as Wallert does, before their emigration from the corpus lutem into the ovarian stroma has been actually observed.

One of the two subjects placed for discussion before the Congress of the German Society of Gynecology[27] was "The Results of Ovariotomy". Two very able and comprehensive papers were prepared by Hofmeier and Pfannenstiel. Polano[121] gives a resume of the extremely interesting discussion in which the various German clinics submitted the statistics of their ovariotomies. Only a few of the more important facts can be mentioned here. The results of extirpation of benign tumors were uniformly good, those of malignant tumors generally bad. Attempts to improve the results of the latter group by removal of lymphglands have failed. In cases of bilateral malignant growths decidedly better lasting results were obtained when the uterus was removed with the ovaries. The ablation of the other ovary on principle in case of a malignant growth in one ovary, as advised by some operators, seems not advisable because such practice increases the immediate mortality of the operation without giving better lasting results.

Much difficulty is experienced at the present time in differentiating distinctly between benign and malignant ovarian tumors. Of course, carcinoma, sarcoma and epithelioma are malignant growths, but it is impossible to properly classify e. g. solid embryomas (teratomas) or especially the papillary cystomas, which histologically are benign, clinically malignant. One cannot help being impressed by the existing confusion in the nomenclature when reading the 'Referat" of Pfannenstiel. He e. g. divides the papillary cystomas into benign and destructive, the latter representing a preliminary stage of carcinoma. And the situation promises to become still more complicated. Eversmann[122], Bell[123] and Ulesco-Stroganowa[124] describe a few new cases of Struma Ovarii Colloidalis. This term designates an ovarian

tumor which in its histological structure resembles, or probably is identical with a thyroid adenoma. Stroganowa's new case seems to lend strong support to the one theory which considers this tumor to be a teratoma, in which a cause, so far unknown to us, leads to such a proliferation of thyroid elements that all the other elements commonly found in teratomata are suppressed. This tumor must clinically be classed as malignant. I should like to call the attention of the neurologists to this latest type of ovarian tumor. It does not seem entirely impossible that in some obscure cases of Graves' disease the struma could be detected in the ovary. Pick again presented us this year with a few new ovarian tumors. He defends[125] his Epithelioma Chorio-Ectodermale Ovarii against Michel and describes in another paper[126] two ovarian tumors of a most peculiar type. The one is an adenoma formed by the proliferation of typical endometrium within the ovary. This growth is named Adenoma Endometriodes Ovarii. The other tumor is called Adenoma Testiculare Ovarii and results from an adenomatous proliferation of the *tubuli seminiferi* of a testicle. True hermaphroditism, that is, the presence of both ovary and testicle in the same individual, has been actually observed by Salen and Simon, so that theoretically no objection can be made against this new form of true hermaphroditism. Pick did not find any spermatozoa in this testicular tissue, lying in such dangerous proximity to ripening ova,—at least he does not mention this fact—and this is rather gratifying, otherwise we should see ourselves forced to admit the possibility of parthenogenesis in the human female.

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PEDIATRICS.

IN CHARGE OF

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FEEDING OF INFANTS. This subject has occupied its usual prominent place in the year's pediatric literature. It is a striking fact however, that despite modern advances in substitute feeding, the statistics of mortality still show that the artificially fed infant is at an enormous disadvantage as compared with the breast fed baby. More and more attention is being paid to the question of conserving the power of mothers to nurse, and to the means of attaining this end. It is encouraging to note that one of Germany's foremost pediatrists, Finkelstein, of Berlin, takes strong ground[1] against the view that the power to nurse is on the decline, supporting his contentions with most interesting statistical evidence.

With reference to substitute feeding, it is noteworthy that the percentage system of feeding, so strongly advocated by the American school, has not found a ready acceptance abroad. It is needless to revert here to the details of the method—though attention may be called to the fact that even in America it is now admitted that exact laboratory modification is not necessary; that home modification under proper supervision will answer for the great majority of cases.[2] [3] Holt[4] calls attention to the fact (long ago noted by Biedert) that disturbances of digestion resulting in excess of fat are quite as serious if not as obvious, as those which follow the use of too high proteids. It is noteworthy that chronic constipation (to remedy which the fats are usually increased) may also be greatly aggravated by such feeding. Aside from the question of the percentage feeding, much attention is being directed to the question of securing a clean milk supply on the theory that no amount of modification will make a bad milk good—while with pure milk simple graded dilution will usually answer. Goler[5] urges the establishment of municipal bureaus of milk inspection under medical control. Such bureaus should ensure the cleanliness of the cattle, stables and handlers—should supervise the character of the food given to the cattle. All cattle should be tuberculin tested. There should be a bacterial standard of not over 100,000 bacteria to the cc. and milk should be furnished with a nutritive value of 12.5 per cent. solids, 4 per cent. of which must be fats. It will be noted that these are substantially the requirements of the so-called Milk Commissions of some of our cities, and there can be no question but that the adoption (and enforcement) of such regu-

lations as these by our municipalities would go a long way toward solving some of our problems of substitute feeding. Hippius[6] recognizing that, under existing conditions, the milk in our larger cities is not safe, given raw, has made a careful study of the results of pasteurization. He finds that by this process most of the pathogenic germs are destroyed, that chemically the milk is hardly affected and that the most important biologic properties of raw milk (the various ferments) all withstand the process properly carried out. Edsall and Miller[7] report very satisfactory results from the use of predigested legume (bean) flour. Extremely concentrated food may thus be given, in fluid form, partially digested. Proteids up to 1 per cent. can be given. Atrophic infants did particularly well on the food. The continental authorities continue to report excellent results from the use of buttermilk (prepared with cane sugar and wheat flour) in athreptic conditions.[8 9] Attention has also been called to the value of this food in rickets where it would appear to be especially valuable in causing a disappearance of the intestinal fermentation.[10] Kassel[11] has experimented with a condensed buttermilk which he has found very satisfactory, but which he recommends for use only in the event that fresh buttermilk cannot be obtained.

General Hygiene. The subject of school hygiene is receiving more and more attention. It is being recognized more and more clearly, that under the mental strain of school work many predisposed children develop various neuroses, and there is a growing belief in the wisdom of "guarding every grade in our public school system by a physical as well as a mental examination, which would prevent the development of a considerable portion of the neurotic diseases now so prevalent among school children" (Rachford)[12]. The wisdom and value of medical inspection of schools are everywhere insisted upon[13]. Meyer[14] has made statistical studies of the nervous diseases of school children, while Wasserman[15] discusses the school in relation to infectious disease.

Diseases of the Newly Born. Porak and Durante[16] made careful studies in 2,603 cases from the Pavillon des Debiles (Paris). Eight hundred and thirty-two of these (32.6 per cent.) showed some form of umbilical infection shortly after birth—499 mild, 333 severe. The latter category included cases of fetidity, gangrene, hemorrhage, abscess and erysipelas. A complete review of the subject with appended bibliography is given. Griffith[17] calls attention to umbilical cord hernia. While the congenital form is much more rare than the acquired, it does occur, and is very apt to be overlooked. If such a condition exist, and a ligature be applied, the results must necessarily be very serious. In all cases where that portion of the cord next to the body is decidedly swollen, the child should be examined very carefully before a ligature is applied. In these cases if the hernia be not easily

reducible, the best prospects are offered by early radical operation.

Specific Infectious Diseases. Scarlet Fever. There is still much discussion as to the etiological relation of the streptococcus group to scarlet. Jochmann[18] holds that while the streptococcus can not as yet be held to be the specific exciting cause of the disease, it is certainly to be held accountable for a great number of the most serious complications. Rossiwall and Schick[19] demonstrated streptoccocci in the exudates of scarlatinal anginas—but agglutination tests showed that they dealt with a group organism. According to the studies of Detot and Bourcart[20] streptococcus agglutination tests in scarlet gave varied and inconstant results. They do not feel justified in drawing conclusions as to the practicability of a serum diagnosis of scarlet, nor as to the question of the specificity of this germ in this disease. Tileston and Locke[21] studied the blood in scarlet. They find a slight anemia with a characteristic leucocytosis up to the 8th day. This leucocytosis is a true one, i. e., there is an increase, absolute and relative of the polymorphonuclears. With the onset of defervescence, there is a constant eosinophilia. Complications exert little influence upon the blood picture.

Regarding treatment, D'Andrea[22] reports very good results in four very severe cases from the intravenous injection of bichloride of mercury, 2-4 mg. The results from the treatment with antistreptococcic serum, have, on the whole, been disappointing. Quest[23] reports 20 cases, Ganghofner[24] 23 cases, and Mendelsohn[25] 150 cases, so treated, without appreciable benefit. On the other hand, Bokay[26] has found the treatment to be of real value in some cases. Since Widowitz published his studies on the prophylaxis of scarlatinal nephritis, by the urotropin treatment, there has been a good deal of discussion of the method. Widowitz gives urotropin, in appropriate doses, during the early days of the infection, then stops its use, to renew it at the beginning of the third week. He claims to have had excellent results. Preisich[27] reports his study of the method. Of 600 cases of scarlet treated with urotropin late, 55 (9.1 per cent.) developed nephritis. Of 600 cases treated without urotropin (under similar epidemiological conditions), 82 (13.6 per cent.) developed nephritis. But of 376 cases in which treatment was begun on the third day, only 8.8 per cent. developed nephritis, while in 315 seen early, but not so treated, 17 per cent. developed nephritis. Garlipp[28] did not get such favorable results, but Kiroff[29] believes the treatment to have distinct prophylactic value.

Diphtheria. In discussing the heart failure of acute diphtheritic toxaemia, Bolton[30] says that we have in this condition both an extensive fatty cardiac degeneration, and acute degeneration of the motor nucleus of the vagus, a disturbed innervation of an acutely degenerated heart. The heart failure exhibited by patients who nevertheless recover, is probably the result of similar though less extensive changes.

Concerning diphtheritic cardiac dilation, Dietlen[31] says that percussion is not always to be relied on in its diagnosis. He finds that in most cases, the heart recovers its muscular tone again, though it is difficult to determine whether secondary dilation does not ensue, inasmuch as this may appear very late, after the cases have passed from observation. White[32] in a carefully studied series of 83 heart lesions in 1,431 cases of diphtheria, says that the cardiac disturbance after diphtheria usually presents the picture of a mitral insufficiency, with irregular heart action and few symptoms. Moderate disturbance of the heart is very common after diphtheria, persisting from two to six months. Cases where the lesion lasts even longer than this, may ultimately clear entirely, however. The duration of the heart trouble is usually in proportion to the severity of the original illness. In the treatment of this condition, prolonged rest is an essential. Rocaz[33] notes that at times we may have a primary diphtheria of the pharyngeal tonsil. The symptoms of this condition may be summarized as the association of the ordinary signs of adenoids, with the symptoms of a diphtheritic intoxication. The prognosis is grave because of the difficulty of diagnosis. He reports ten cases. Discussing the relation of diphtheria and measles, Hellstrom[34] reports 112 cases of diphtheria after measles. Of these, 98 were laryngeal and the mortality was 62.2 per cent. although that of ordinary laryngeal diphtheria in this epidemic was only 27.3 per cent. Of 109 cases of diphtheria later complicated by measles, only 8 proved fatal however. Mourniac[35] and Pillon[36] report cases of post diphtheritic paralysis, promptly cured by the late injection of antitoxin, after the suggestion of Comby. The treatment is of value even in cases where the original attack was treated by antitoxin. There would appear to be a consensus of opinion as to the great value of prophylactic injection of antitoxin in persons who have been directly exposed to the contagion, or in institutions where the disease has manifested itself.[37] From 300 to 500 units should be given as an immunizing dose. Marfan[38] and Clavel[39] discuss the "accidents" after the use of antitoxin. Collective investigations, covering hundreds of thousands of cases show that except for various kinds of evanescent exanthems, and fugitive joint pains, no accidents have followed the use of pure antitoxin, properly administered.

Cerebro-Spinal Meningitis. During the year epidemics of cerebro-spinal meningitis occurred in various countries, in fact the disease was practically pandemic. The literature is filled with articles concerning all phases of the disease. Discussing the pathology Westenhoeffer[40] says that the principal port of entry is the nasopharynx—the tonsils being of special importance. Meningitis is primarily always basilar—and extension occurs by the lymph channels. He believes that children with the so-called lymphatic constitution are distinctly predisposed, that the method of direct infection is by inhala-

tion, and that the fight against the disease must be a distinctly hygienic one. He is not willing to concede that the diplococcus intracellularis has been definitely proven to be the specific etiologic factor of the epidemic form—though it doubtless plays an important role. The consensus of opinion however is that this germ may be considered as the definite etiologic factor. Cardamatis[42] believes that neuropathy and alcoholism of the parents are predisposing causes of importance. An interesting summary of the symptomatology—based on the studies of 100 cases is given by Huber[43] and Jacobi[44] also has a most excellent general review. Loeper[45] says that polyuria dominates the syndrome. Albuminuria is not marked. Ingested drugs appear promptly and abundantly in the urine, showing renal permeability. In the severest cases this polyuria is not observed, nor is it present in influenzal, pneumococcal, typhoid or tubercular meningitis. This may be a diagnostic point of value. Curl[46] in studying the blood changes, finds the red cells normal or increased, but no leucocytosis. Relatively the eosinophiles are decreased, and the large mononuclears increased.

Concerning posterior-basic meningitis, Koplik[47] believes that most of these cases belong in the category of epidemic cerebro-spinal meningitis, although on account of the preponderance of the basal symptoms, the diagnosis from the tubercular form may be difficult. The fundus find and lumbar puncture are important diagnostic aids here. Discussing conditions which may be taken for meningitis, Baumann[48] says that it is not the occurrence of the disease itself which produces diagnostic difficulties, but rather that a number of diseases tend to assume a type simulating meningitis. The diagnoses of tubercular, suppurative and posterior basic forms are then summarized and a series of carefully studied cases is reported all of which adopted meningitic types. This list includes cases of typhoid, pneumonia, influenza, mastoiditis, sarcoma of the brain, gastro-enteritis, and renal disease.

In a discussion of the disease and its contagiosity, Buckingham[49] says that at the Children's Hospital in Boston, the cases are not isolated, but are treated in the medical wards. During the years 1896-1904, 110 cases were admitted 16 being in the ward at one time. No case has ever originated in hospital among either patients or attendants.

Considering the treatment of the disease, Huber[50] says that as yet our treatment is necessarily empirical and symptomatic. He believes that preventive hygienic measures will avail more in overcoming the disease than our remedial measures. Stockton[51] summarizes the principles of treatment as requiring: Rest in a darkened room, the securing of the proper performance of the vegetative functions, the giving of hot baths, lumbar puncture to relieve pressure repeated if necessary, antipyrin for headache and hyperpyrexia with or without

opium and bromids, and mercury for its laxative effect and as an aid to elimination. Speer[52] places reliance on bromids, chloral, hyoscyamine and cannabis indica, in full doses. Rozhansky[53] finds the hot bath, given once or twice daily, of great value. The general mortality of his series of 62 cases, was 45 per cent., of the cases so treated it was 33 per cent. Four cases, in which this treatment was instituted during the first days of the disease, all recovered. Kallmeyer[54] also believes the hot bath treatment to be very valuable. To it, he adds the use of arsenic, internally or hypodermically. Seibert[55] advocates the rectal injection of large doses of sodium salicylate. Waltzfelder[56] believes that he has seen very good results from the injection of diphtheria antitoxin. It should be given in larger doses than are ordinarily used in the treatment of diphtheria, and its use should be continued at intervals until all the nervous symptoms have disappeared.

There would appear to be great diversity of opinion as to the therapeutic value of lumbar puncture. There is of course, no discussion as to its value as a diagnostic aid. Many authorities have found repeated punctures, with injection of antiseptic fluid (e. g. of 1 per cent. lysol solution) into the canal, to be distinctly valuable[57]. 25-50 c.c. of the cerebro-spinal fluid are withdrawn, and 3-9 c.c. of the lysol solution are injected once daily till the cerebro-spinal fluid becomes sterile. Bloch[58], Altman[59] and Jochmann[60], all agree that the puncture has a palliative effect, especially if there be signs of great increase of the intracranial tension, that by this means, pus may certainly be withdrawn from the canal. As a direct method of therapy, however, they do not feel that any claims can with justice be made for the procedure. Lenhartz[61] however, holds that repeated puncture is undoubtedly of direct therapeutic value, a view shared by Cupler[62]. Drigalski[63] actually recommends the leaving of a canula in the canal for days at a time, because of the value of puncture and the drainage thus established.

Measles. Gillard[64] reports 25 cases of measles of gastro-intestinal type, 18 of them ushered in with severe diarrhoea. The eruption, which was typical, appeared two to three days after the diarrhoea. The stools were greenish, very fetid, and numbered about twelve per day. The diarrhoea lasted from two to nineteen days. In 8 cases, four of them fatal, the onset was marked by vomiting. In the diarrhoeal cases, the temperature was subnormal throughout.

Typhoid. Edsall[65] calls attention to the varying opinions as to the prognosis of typhoidal insanity in childhood. Of 76 cases collected by him, there was mania in 36, dementia in 26, and delirium with hallucinations during convalescence in 14. All cases of the latter category recovered. Of the others, 43 recovered, 3 died, and the rest remained unchanged. It is probable that dementia is more common after childhood than in adult life. Some of the cases are doubt-

less due to the malnutrition. Heredity would not appear to play any role.

Tuberculosis. An interesting case of congenital tuberculosis, death on the 19th day of life, is reported in detail by Wollstein[66]. The mother had generalized tuberculosis with lesions of the genital tract. Szontagh[67] in 489 autopsies on infants, found tuberculosis in 21.8 per cent. of all the cases. Of these cases, 68.5 per cent. were inhalation tuberculosis, while in 6.8 per cent. the infection evidently occurred through the digestive tract. Stirnimann[68] in 591 autopsies on infants under one year, found tuberculosis in 41 cases, though in 5 of these it was not the direct cause of death. A detailed analysis of the lesions is given. It is noteworthy that the lungs were affected in 36 of the 41 cases, though in no case were the pulmonary signs marked enough during life to enable a definite diagnosis to be made. The "probable" diagnosis was made four times. Heredity was a factor in 13 cases, but could be absolutely excluded in 12. The author holds that the great frequency of respiratory lesions, speaks for infection through the respiratory tract. Piettre[69] also holds that tuberculosis is above all else an inhalation disease, though he is convinced that infection through the gastro-intestinal tract, (more especially from tuberculous milk) does occur. Dudreuil[70] finds that intestinal tuberculosis, while not nearly as common as the inhalation form, still does occur frequently. He thinks that there can be no doubt that in certain cases, tubercle bacilli may penetrate through a healthy intestinal mucosa without injuring it. Therefore it is not rare to find tuberculous mesenteric glands without intestinal ulceration Bacillary infection is however favored by pre-existing gastro-intestinal lesions, and the existence of gastro-enteritis may thus be considered a predisposing cause. To test Behring's theory of the latent tuberculosis of infancy, Beitzke[71] took the blood of children from 3 days to 9 years of age, at the post mortem table. According to the theory, bacilli should have been found in the blood. Guinea pigs were inoculated, with negative results in 47 of the 48 cases. The author holds that Behring's theory of a latent infantile tuberculosis, without the production of anatomic lesion has yet to be proven. Hamburger and Sluka[72] contribute a very careful study of the tubercular lesions in childhood, largely statistical, which does not lend itself to abstract. Hutinel and Lerebouillet[73] believe that tuberculosis in childhood develops in stages. The first stage often comes on very early, being ordinarily consecutive to contagion, and marked by the production of a mediastinal or mesenteric lesion. The process may then remain latent, even in favorable cases, conferring a sort of immunity against later attacks on the individuals. Or, by a later process of autoinfection, the disease may progress in acute, subacute or chronic form. This stage may

again produce lesions, which are still curable, or there may be direct progression to a fatal termination.

Schick[74] discusses the diagnostic tuberculin reaction in childhood. In many cases the reaction presents no characteristics, different from those seen in adult life, but two points are worthy of note. The so-called protracted reaction where the rise of temperature persists for several days, is much more common in childhood and in many cases there is an intense reaction at the site of injection (Stichreaction of Escherich). Of course a positive reaction shows merely that a patient is either actively tuberculous, or that a tuberculous focus exists. But in childhood, there is less likelihood of the existence of old foci, and this fact lends added importance to the reaction in early life. The initial dose should never exceed 1 mg. of the old tuberculin, and for very young children even this dose is often too large.

Interesting discussions of the familial contagiosity of tuberculosis and its prevention are offered by Marfan[75] and Comby[76].

Syphilis. Evidence as to the frequency of hereditary syphilis is given by Neumann and Oberwarth[77]. Of 69,221 cases admitted to Neumann's polyclinic in Berlin, 690 (1 per cent.) were cases of hereditary lues.

Diseases of the Digestive System. Recurrent Vomiting. This subject has engaged the attention of many pediatrists of late. It has been described as "a symptom group closely related to migraine, autotoxic in origin, and characterized by recurrent attacks of nausea, persistent vomiting and great prostration."[78] Langmead[79] reports a typical case ending in coma, and finally, general convulsions. At autopsy, the liver was found to be enlarged and fatty. There was fatty degeneration of the kidneys, with haemorrhage into the left suprarenal. Giliberti[80] gives a complete review of the subject, with a summary of existing views. Nearly all writers are agreed that recurrent vomiting is an autointoxication, though there is much discussion as to the source of the toxins. A functional incompetency of the liver would appear to be an all important factor. Richardiere[81], commenting on the occurrence of icterus in some cases says that he has found the liver enlarged in all cases, whether icterus was present or not. He believes the hepatic disorder to be of the greatest importance. Marfan[82] is not inclined to accept the hepatic origin. He comments on the noteworthy familiar character of the disease. Comby[83] reporting 34 cases, notes that in 33 there were arthritic antecedents: gout, obesity, asthma or migraine. Enlargement of the liver was found only twice in the series. Apert[84] considers dentition an occasional cause. He reports a case of typical attack with each eruption of a tooth. Concerning special symptoms, in addition to the characteristic ones, Misch[85] discusses what might be called a "forme fruste" in which the only symptoms are recurring attacks of malaise, with high fever and acetonuria.

He reports 30 cases of this class. He notes, however, that as a rule there is a recurrent angina in these cases, either catarrhal or exudative. Attention was first called to this recurring coryza in cases of recurrent vomiting, by Rachford. Another symptom, considered by Rachford as extremely common in the later stages of the attack—narcotism—has not been noted elsewhere. According to Guerin[86] the paroxysm appears in various forms, of which the severest is the convulsive. The nervous element may substitute itself completely for the attacks of vomiting.

It is generally recognized that the accompanying acetonuria is to be considered as effect rather than cause, indeed this is true of the various acid intoxications which accompany these attacks. (Morse[87]). It is of course well known that acetonuria occurs in diverse conditions in childhood. Meyer[88], referring to its common occurrence in the acute infections, notably diphtheria, scarlet and measles, says that it is caused here, as elsewhere, by diminished carbohydrate intake. (Kohlehydrat inanition). It does not appear that the degree of acetonuria stands in direct relation with the severity of the infection, but its relation to the alimentation, especially to the carbohydrate assimilation would appear established.

Summer Diarrhoea. Dunn[89] has a very careful study of this subject, clinically and pathologically. (This article was abstracted in the September number of the Interstate Med. Jour.) Heineman and Michael[90] made cultures from 102 cases. In 76 cases, no bacilli corresponding to any type of B. Dysenteriae were found. In 26 cases (25 per cent.) bacilli were found corresponding to some form of the group, though nowhere of the true Shiga variety. The cases showing the bacilli, were cases of ileocolitis not to be clinically differentiated from those in which no bacilli were found. B. Dysenteriae was *not* found in all cases with mucous and bloody stools.

Constipation in the Nursling. Saias[91] made a number of autopsies on infants dying of various conditions, to determine the comparative length of the large bowel. He found the descending colon very long, with a considerable number of flexions, in many cases. The transverse and ascending portions were also long, contrary to the statement of Jacobi. The author sees in this condition of the colon, a mechanical cause for the constipation so commonly seen in the nursling and this mechanical cause is not found in the adult.

Diseases of the Respiratory System. Pneumonia. Wollstein[92] has studied the bacteriology of 100 cases of pneumonia in infancy. The pneumococcus was present in 67 cases: 25 primary (76 per cent. of the total number of this group) and 42 secondary (63 per cent. of the total of this group). The percentage of empyema was alike in both classes, primary and secondary. But the pneumococcus cases grouped together, showed a larger percentage of pleurisies, and a

greater tendency to purulent infiltration and abscess formation. The influenza bacillus was *not* found in the cases clinically influenzal.

Discussing lobar pneumonia in infancy and childhood, Koplik[93] notes the tendency of certain epidemics to run with marked meningeal involvement, particularly if the pneumonia be apical. Concerning prognosis, he finds that pericarditis is by far the most fatal complication, while otitis, pleurisy and empyema are not so serious. Wilks[94] sounds a note of warning against indiscriminate chest puncture in children, reporting a fatal case. The subject is also considered in an excellent editorial in the British Journal of Children's Diseases[95].

Heubner[96] finds hot mustard packs followed by plain hot packs, far superior to hot mustard baths in the treatment of bronchopneumonia in children.

Diseases of the Uro-Genital System. Acute Pyelitis. Freeman[97] says that this condition is frequently overlooked on account of the absence of local symptoms. Many of the cases follow intestinal disorders. Jacobi lays special stress on the importance of routine examinations of the urine in very young children with high fever and digestive disorders. The same view is expressed by Baginsky, while Pick[98] rather inclines to the belief that the gastro intestinal disorders of childhood are more apt to be complicated by a true nephritis of insidious onset, and, often, of chronic course.

Nephritis. In a very suggestive article, Weigert[99], discusses the dietary treatment of nephritis in childhood. He finds that in chronic nephritis, albuminuria is most markedly increased on a purely meat diet, and diminished most decidedly by a purely vegetable diet After meat, the greatest degree of albuminuria follows *the giving of a strict milk diet.* The quantity of NaCl in the food, would appear to be of great importance in cases with marked edema. Withdrawal of the NaCl from the food in these cases is followed by a marked reduction of both edema and albuminuria.

Discussing decapsulation of the kidneys, Graham[100] says that the best results have been seen in acute and subacute forms of nephritis. He would urge operation only for such cases, however, as are not doing well under medical treatment. The results in the chronic cases have not been so favorable.

Cyclical Albuminuria. Dukes[101] says that this condition occurs (1) in neurotics, (2) in children with marked increase of the arterial tension, because of the irritability of the vasomotor centres. It is produced by excess of nitrogenous food, imperfect elimination, and hereditary gouty tendencies. Where the condition is recognized and intelligently treated, there is little danger of nephritis, even though the albuminuria be of long standing.

Gonococcus Infection. Holt[102] calls attention to the great fre-

quency of vulvo-vaginitis in children's hospitals. Inasmuch as there is a great tendency to the spreading of the diseases in institutions, prophylactic measures are absolutely necessary. Quarantine, to be effective, must extend to nurses and attendants as well as to children. Twenty-six cases of gonococcic arthritis are reported, 14 of them fatal. Cotton[103], in reporting an epidemic of vulvovaginitis says that gonorrhoea is a "formidable disease" in children's hospitals He also urges careful isolation, not only of the patient, but as regards bed linens, utensils, thermometers, etc.

General Diseases. "The Exudative Diathesis." Czerny[104] suggests that a congenital anomaly may be responsible for various affections accompanied by exudation such as eczema, seborrhoea, geographical tongue, tonsilitis, retropharyngitis, adenitis, recurring bronchitis and other affections of the mucous membranes. The cases are seen both in breast and artifically fed infants. They form a group, with features in common suggesting a congenital anomaly of the infantile organism, though the course of the individual case is determined by the condition of the nervous system, character of the food, and intercurrent affections The treatment must consist in careful regulation of the diet, which should be purely vegetable (even eggs being interdicted), the systematic disregard of exaggerated subjective disturbances, and the avoidance if possible of intercurrent affections.

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ORTHOPEDICS.

IN CHARGE OF

NATHANIEL ALLISON, M. D.

In an address on the responsibilities of surgery, delivered at the Portland meeting of the American Medical Association, Richardson[1] made a statement of sufficient interest to be quoted directly. He says:

> The tendency at the present time is and should be towards specialization in the treatment of fractures. In cities, and, in fact, in all communities, it would, I am sure, be an advantage if the treatment were placed into the hands of men who have a special aptitude for this branch of surgery. The orthopedic surgeon is by his training accustomed to the making and fitting of apparatus; and the result in fractures depends very largely on the way in which the bones are held by the apparatus in proper position after once they have been put there. At the Massachusetts General Hospital fractures of the jaw have for many years been referred to the dental school, and fractures of the nose to the department for the nose and throat—much to the advantage of the patient. Would it not therefore be wise if fractures in general were regarded as a branch of orthopedics.

And to drive this argument home he adds this foot-note:

> Almost as I am writing these words I am asked to defend a physician of whose treatment of a Colles's fracture only two criticisms can be made: One, that the fracture was not reduced under ether; the other, that the arm (in the case of a woman of sixty) was kept in splints too long. Nevertheless, there are permanent deformity, impairment of the wrist motion, and stiff fingers. The physician felt confident that he could treat a little thing like Colles's fracture as well as anybody else, even in a community where the standard of skill was high. In consequence, the patient is dissatisfied, the physician worried, and the surgeon annoyed.

This coming from a surgeon who has always been in the van of progress is of marked significance. For a number of years there has been a tactit recognition on the part of the general practitioner, that it is necessary to have one specially skilled in fracture treatment, either to aid him in, or to relieve him entirely of the responsibility of handling a broken bone. A bad result following fracture is evident both to the patient and to his friends, and is car-

ried about as a constant reminder of a misfortune with which (many times unjustly) is associated some unfortunate practitioner's skill. Due to the present high standard set in the management of fractures, it is necessary to devote much time and care to their treatment, so much so in fact, that it almost constitutes a specialty in itself.

Richardson's statement is based upon the need that is felt by every surgeon who does much abdominal work, the necessity of some one to relieve him of the burden and worry which accompanies the treatment of fractures. The question is, shall there be a specialty limited to the treatment of fractures, or shall these cases be loaded upon the orthopedist? One aim of orthopedic surgery is to correct deformity, and in consequence, the orthopedist is often called upon to correct the deformity which follows mal-union of a broken bone. Aside from correcting deformities already established, orthopedics has long since advanced to the pervention of deformities. The work of Whitman[3] on the correction of coxa vara has thrown new light upon the immediate care of fractures of the femoral neck. Recognizing this, Scudder,[2] in this year's edition of his book says: "The treatment of fractures of the neck of the femur is undergoing a change, which may prove to be a very radical one."

Fortunately in matters such as this, the necessities which arise with the advance of treatment alone can establish the custom to be observed; but there is much truth in Richardson's statement, that the orthopedist who devotes his attention chiefly to the prevention and correction of deformities, seems to be the man best suited to assume the responsibilities of fracture treatment.

Relaxed Pelvic Articulations. Goldthwait and Osgood[4] have definitely defined the pathological and clinical conditions associated with abnormal laxity of the pelvic joints. This group of affections was formerly regarded as being seen only in women during or after pregnancy, and the condition was considered rare. These authors have completely described the condition from the standpoint of anatomy, pathology, and clinical observation; believing at first that parturient women alone suffered from this laxity, observation soon revealed the fact that the symptoms increased at the menstrual period, and later that pregnancy and menstruation, while undoubtedly factors in the production of abnormal pelvic joint mobility, were by no means necessary to its production; that there are other causes, and that the condition exists in men and children.

These discoveries suggested an anatomical consideration of the pelvic articulations which resulted in the conclusion that the pelvic joints are true joints, having all the structures common to joints, and liable to disease and injury as are other joints. Numerous careful anatomical observations were made on the amount of motion normal to these articulations, establishing the fact that motion in the pelvis

must take place in, or be dependent upon the sacro-iliac-synchondroses. Pregnancy, menstruation, injury,disease, and general lack of muscular and ligamentous tone are all factors in the production of this laxity which results in a definite symptom complex.

Clinical observations divide the cases into three groups: Group one includes cases where there is an exaggeration of the normal physiological relaxation of the articulation depending upon pregnancy. Group two includes the cases where there is an exaggeration of a physiological condition (apart from pathological change) associated with menstruation. Group three, where trauma, general weakness, or more definite pathological process is the cause—sex and age have no relation to the frequency of this class.

The etiology, aside from the abnormal physiological processes, depends on trauma, such as "sitting down hard" or "giving way" under severe strain in lifting. The trouble is more frequent in fat people, where the drag of the large abdomen causes lordosis and increased pelvic joint strain. People who have naturally a lack of physical tone are also predisposed to this trouble. The subjective symptoms have a wide range as to severity. In cases where the degree of laxity is great there may be extreme disability and constant suffering. Other cases complain only of backache referred to the sacral region, or to one synchondrosis or the other. At times there is a sensation of giving way when a sudden jar or misstep takes the muscles off guard. Objectively, the motion which bring strain on the weakened articulation are guarded, especially in stooping or lying down. If one side alone is affected the patient stands with peculiar lateral deviation of the body. Forward or lateral bending of the spine is guarded.. There is spasm of the hamstring muscles making it painful, and in severe cases impossible, to flex the thigh with the leg extended. Subluxation is at times revealed by palpation.

The treatment consists of protection to the joint and replacement of subluxation when discovered. The form the protection takes should be suited to the individual case, extreme cases requiring recumbency in plaster of Paris or a leather jacket. Milder cases require the support offered by several different forms of apparatus, the thing essential being the protection of the strained articulation, at night as well as during the waking hours. The authors describe several forms of brace. The importance of such a complete treatise as this cannot be over-estimated. It throws light upon many heretofore obscure complaints which have entailed much misery. It is of particular interest in its relationship to gynecology and obstetrics

Scoliosis. An attack has been made on this condition from a new position. Lovett,[5] realizing the advantages to be gained from a new viewpoint, has made an exhaustive study of the mechanics of the normal spine, and has shown their relationship to scoliosis. Hereto-

fore scoliosis has been approached only from a pathological standpoint, as if "one undertook to investigate a railway accident solely by the study of the wrecked cars"; the results of the destructive forces could be made out, but more could be established by learning the proper relation of the trains to each other, and the signal system and precautions necessary to prevent accidents. His object therefore was to give a clear, concise description of the normal spinal movements, and then to discover their relationship to scoliosis.

A symmetrical living model, a young adult male and female cadavers and some two hundred cases of lateral curvature furnished the material. This has been admirably handled, and the normal mobility of the spine, as well as its separate movements, established and analysed. A summary of this work is as follows:

(1)—In the lumbar region flexion diminishes mobility in the direction of side-bending and rotation; and extreme flexion seems to lock the lumbar spine against these movements. (2)--In the dorsal region hyperextension diminishes mobility in the direction of side-bending and rotation. Extreme hyperextension seems to lock the dorsal spine against these movements. (3)--In flexion of the whole spine, side-bending is accompanied by rotation of the vertebral bodies to the convexity of the lateral curve, the characteristic of the dorsal region. (4)--In an erect position and in hyperextension of the whole spine, side-bending is accompanied by rotation of the vertebral bodies to the concavity of the lateral curve, the characteristic of lumbar region. (5)--The dorsal region rotates more easily than it bends to the side. Whereas, the lumbar region bends to the side more easily than it rotates. (6)--Rotation in the dorsal region is accompanied by a lateral curve, the convexity of which is opposite to the side to which the bodies of the vertebrae rotate. (7)--The column of vertebral bodies obeys in flexion, hyperextension, side-bending and rotation, and in the combinations of them, the same rules which govern the intact spine. A fact of much significance in connection with the rotation theories of v. Meyer and Albert.

In applying this knowledge to lateral curvature the author concludes that there are two distinct conditions of this affection, one to be regarded as functional, and not accompanied by extensive pathological changes, the other represented by the cases which are accompanied by pathological changes in the vertebrae; and that between these two cases transitional cases exist. The point of this classification lies in the fact that the postural cases may be accounted for by the motion which physiologically exists in the normal spine, and that the normal mechanism will not account for bony rotation on the convex side of lateral curvature, which is due to superadded pathological change.

Schanz[6] has thoroughly re-covered all the ground from a pathological standpoint. Concluding that true scoliosis presents in all cases a characteristic symtom complex, and that all cases of torsion of the spine are not true scoliosis.

Schultess,[7] Riedinger,[8] Reiner,[9] and Spitzy[10] have written complete articles from a clinical standpoint, all of which set forth in concise form that which is generally known and accepted.

Congenital Dislocation of the Hip. The large measure of success following the manipulative reduction of this dislocation, as shown by the ultimate reports that have appeared during the year 1905, seems to promise for the future the approximate elimination of that class of cases now referred to as irreducible. Clark,[11] in England, has written a most optimistic paper and has reported a number of anatomical repositions. He does not regard the operation as either dangerous or difficult. Tubby[12] has also put himself on record as believing that the progress shown by the results of the manipulative operations is encouraging to a high degree. Froehlich,[15] in France, has reported a high percentage of success, i. e., in double cases 20 per cent. perfect, and 69 per cent. very satisfactory results. In single cases 20 per cent. perfect, and 66 per cent. very satisfactory results. In America reports which correspond to these have been forth-coming. It may be assumed that generally these cases are now subjected to rational treatment, and that each succeeding year will show an increased account of success.

For a certain class of cases that relapse after repeated attempts at manipulative replacement, Bradford[13] has recommended an operation which will fill this gap in the therapeutics of congenital hip. Realizing the faults of the older cutting operation which involved curetting of the rudimentary acetabulum, thereby wasting valuable tissue and exposing the joint to the danger of bony ankylosis, he conceived the idea of utilizing the fibrous tissue found in the acetabulum to retain the reduced head. He advises an incision which will expose the joint without the division of muscles. Through this opening the capsule is freely divided and the socket exposed. All capsular bands which prevent or restrict a perfect reduction are carefully divided, deep silk sutures are places in the capsular tissue at the lower margin of the acetabulum, the other portions of the split capsule are stitched about the head and neck, so as to aid in its retention. This operation requires nice attention to details, but is accompanied by little or no shock. He reports three cases where this was done, and in each there is now a firmly reduced joint with adequate motion.

Bartow has devised a valuable aid to the after treatment in the shape of a modified plaster of Paris spica. This bandage, reinforced by a long flat piece of steel, forked at the ends, makes a bridge running from a pelvic band to a thigh band, the latter covering only the lower

third of the thigh; this leaves the adductor surface, the perineum and buttock free to be cleansed, and also makes examination of the joint while in plaster of Paris, a matter of less difficulty.

Much has appeared to increase anatomical knowledge of this condition. Kermisson[14] has reported the anatomy of a foetus with unilateral dislocation. On the affected side the acetabulum is small and undeveloped. The femur is smaller than its fellow and has changed shape. The joint capsule is notably elongated and the ligamentum teres is long. He concludes that the malformation is of early origin, and involves all the structures that go to make up the hip articulation. Poticki[16] has made a similar report. The foetus also presenting unilateral dislocation. He shows by careful measurements that the whole dislocated extremity shows change. He compares this deformity to other congenital deformities, and concludes that it must be due to the same causes, which are probably trophic. Gocht[17] has reported the anatomy of two cases that died after treatment. He dwells upon the importance played in the reduction, and in its retention by the capsule and its accessory bands.

Foot Error. H. L. Taylor[18], in an article on the practical importance of correct foot postures, both in standing and walking, has demonstrated several points of general importance, as well as of special importance to military men and gymnasium teachers. "Toeing out" throws the weight on the heels, increases pronation, diminishes stability and control, consequently weakens the foot and causes a weak, awkward gait, bad general posture and fatigue. "Toeing straight" protects the foot, favors efficiency and gives correct general posture. "Toeing in" protects the arch, the inner side of the foot and the inner side of the knee. All prolonged standing is harmful, least so when the base is frequently shifted from one foot to the other. In standing the feet should not be turned out.

Hoffmann[19] taking advantage of the attendance of several varieties of primitive people at the Louisiana Purchase Exposition, has made a careful study of one hundred and eighty-six pairs of non-shoewearing feet. He met with many difficulties in obtaining his material, but after months of most painstaking effort he has produced a complete piece of work. He found that there is no relationship between the height of the arch and the character of the gait, and that the height and shape of the longitudinal arch has no bearing on the strength and usefulness of the foot. Variations in the shape of the foot and the character of the gait are as great among the feet never imprisoned in a shoe, as they are in the habitual shoewearing foot. A study of all foot-wear has led him to conclude that anything that is practical in the shape of a shoe has a decided tendency towards the production of hallux valgus and foot compression deformities. Some of the bare feet when put in shoes showed in a short time in-

evitable results of shoewearing. The acquisition of shoe deformity like other acquired traits is not transmitted. The child of shoe-wearing parents has just as normal a foot at birth as the child of the most primitive savage. This article is also replete with valuable suggestions to military authorities.

Muscatello[20] has reported a case where total collapse of the arches in both feet followed the inflammatory edema of gonorrhoeal rheumatism located about the tarsus. This deformity was of gradual onset and progressed to complete arch obliteration and eversion of the feet. The patient was treated by manipulation and correction under an anesthetic with satisfactory results.

Wilson and Patterson[21] have described a new operative procedure for flat foot which they claim yields better functional results than any of its predecessors. The operation is a combination of arthrodesis and tendon transplantation. The arthrodesis is done on the astragalo-scaphoid articulation, enough bone being removed to allow a complete restoration of the longitudinal arch. The tendon transplantation consists of putting the divided tendon of the extensor proprius pollicis through a hole drilled in the scaphoid bone, and suturing it to the periosteum on the plantar surface. To gain success the foot must be flexible and the transplanted tendon subjected to the proper tension.

Painter[22] has described three varieties of flat foot that heretofore have been treated by manipulation as one class. The first class of cases has sensitiveness which causes reflex spasmodic contraction at the medio-tarsal joint, the foot resisting passive inversion. If adhesions exist in the articulation these cases must be anesthetized and corrected by manipulation. The second class is made up of cases that have abduction and pronation, which are due to marked spasm of the peroneal muscles. Under anesthesia this spasm disappears, only to return when the corrective bandage is removed. Here he advises resection of from ¾ inch to 1 inch of the personal tendons and destruction of their sheaths. Correction is then permanent. The third class is constituted by the cases that present bony deformity. Removal of the scaphoid will alone allow the restitution of an arch and functional improvement. The writer states that many manipulative flat feet operations have failed due to the non-recognition of these distinctions. He reports thirty successful cases of peroneal tendon resection and twelve excisions of the scaphoid.

Bone Transference. Huntington[23] has transferred a portion of the fibula to fill a gap caused in the tibia by osteomyelitis. The patient was an otherwise healthy. The fibula was first divided and the upper end of the distal fragment was approximated to the lower end of the upper tibial fragment. Union was slow here, as was functional improvement. Later the fibula was again divided and

the end approximated to the upper end of the lower tibial fragment. Union followed with good return of function.

Tendon and Muscle Transference. The period of criticism doubt that has come upon these operations Bradford[24] says is only one of the phases of the cycle through which new surgical procedures must pass before they become definitely established. Disregard of the mechanical principles involved in this work he believes to be the cause of so many unsuccessful results. No one can doubt the efficacy of this kind of surgery, but one must not enthusiastically rush into tendon or muscle grafting with the idea that the only thing necessary is to switch a tendon into another tendon to obtain a perfect result. The cases must necessarily be carefully worked out, and more carefully executed, in order to get improvement. He reports six cases of positive success after from one and one-half to five years. In one of these cases a portion of the trapezius was inserted into a paralyzed deltoid, with good function resulting. In another this was supplemented by placing the pectoralis minor in the biceps with return of arm function.

Spinal Caries. Brackett and Crandon[26] have made acareful study of the various methods of applying the plaster jacket to Pott's disease; they conclude that the jacket is best applied to lumbar diseases on a hammock, face down; that in dorso-lumbar disease there is increase of deformity if the compensatory lumbar curve is increased; that the jacket should be carried high in front for high dorsal disease, and postural defects avoided; that the dorsal position is best adapted to the application of the jacket to dorsal disease. In old cases with deformity, care should be taken to avoid lordosis. The poise, while standing, is a valuable guide to follow in judging the efficacy of an applied jacket. A jacket weighing 1 lb., 12—14 oz. should be sufficient for a child aged from three to five years, and one weighing 2 lbs., 10 oz. for a child aged ten to twelve years. Thorndike[25] has devised a method of measuring and recording the spinal curve without removing the jacket. This is done through two vertical oblong windows cut over spinous processes and the use through them of the Young spine tracer. The partial curve thus obtained is then completed on paper and calculated in degrees.

Arthritis Deformans. Following the lead of Schuller[27] and Bannantyne[28], Fayerweather[29] has found in three cases of chronic joint disease a short bacillus with rounded ends. He has carefully considered the ever present chances for error in this kind of work and reduced them to a minimum. This bacillus, found in pure culture, was cultivated on artificial media and characteristic lesions in the joints of lower animals on inoculation. From a case of acute rheumatism he isolated a similar organism. He believes there is no definite evi-

dence to indicate any essential difference between acute articular rheumatism and the infectious polyarthritis chronica villosa of Schuller; that clinically, these two types should not be sharply separated. From such a limited number of cases he does not feel able to draw any absolute conclusions, but he points out the advantages to be gained by bacteriological study, especially of the blood, of these cases. H. W. Jons[30], in a study of thirty cases of non-tuberculous joint disease, states that trauma, exposure to cold, etc., had apparently no influence on the production of the disease. He also points to the moderate success possible of achievement in the treatment of these cases.

F. L. Richardson[31] has divided seventy-five cases of arthritis people in whom the disease is periodic, the joints being tender and swollen to a fusiform shape. The diagnosis of the first attack is usually acute articular rheumatism, but the temperature seldom goes over 102° and the acute symptoms disappear leaving the joint always more or less damaged. Recurrence takes place in from a few weeks to two years. This class of cases may follow some definite infection.

In the other class the cases present crippled joints which show marked deformity of the articular surfaces and often new formation of bone. These cases are usually "physiologically old" and present calcification of the arteries. In part, there seems to be, as Bradford has said, an analogy between this condition and arterio—sclerosis, the factors which produce the one may well produce the other. But why in one class of cases there is new formation of bone and in another class bone absorption is as much unknown at present as are the various conditions which give rise to these diseases

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REVIEW OF NEUROLOGY AND PSYCHIATRY.

IN CHARGE OF

SIDNEY I. SCHWAB, M. D.

The scheme of division followed in the review of last year will in the main be used in this year's review. In addition to the sources drawn upon for papers indicating progress an effort will be made to give some idea of the general trend of neurological thought as seen in the subjects touched upon at the annual meetings of the representative special societies in France, Germany, England and America.

The following divisions will be maintained in the paper. 1. Papers dealing with case reports, collection of cases, statistical studies and other clinical data. 2. Studies relating to the Physiology, Anatomy, Chemistry and Pathology of the Central Nervous System. 3. Newer methods of therapy and new methods of clinical and laboratory diagnosis. 4. Brief consideration of notable text books and larger monographs.

In clinical neurology it is possible to observe two different tendencies, one seems to be directed to the accumulation of a mass of clinical data derived from the study of many cases of the same disease and the other seems to be directed to the study of rare types of disease of which only a few instances are to be found in the literature. In one case there is an inclination to narrow the conception of diverse classified disease types, in the other there is the same inclination to broaden it.

However diverse the currents in neurology may be thought to be there seems for Psychiatry to be only one very marked tendency and that seems to be directed still to the question of the place which certain general varieties of psychoses should occupy in the scheme of classification. This tendency is best illustrated by the great activity in the dementia praecox question and in the rehabilitation of the question in regard to the justification of hypochochondriasis to be considered as a clinical entity. These activities are reflected in the literature of a year and the papers that will be mentioned in the first part of this review serve as illustrations of them.

The question of arterio-sclerosis as a clinical picture no less than its special pathological aspect has aroused the interest of a number of investigators. An interesting commentary on this apparent sudden interest in a subject long since allowed to rest lies in the fact that the special application of the facts discovered in the laboratory follows long after the facts themselves have become common property.

This lagging behind has been the cause of endless confusion on account chiefly of the newer data always in process of being gathered. For the past five years or more pathologists have been going over the question anew and with the better technique at their disposal and the more general realization of the part played by the plasma cells and other finer structures of the blood vessels have determined facts which are now coming to have some clinical importance. Therefore the work of Barret[1] deserves mention, who in a number of publications has attempted to show that arterio-sclerotic disease of the vessels causes clinical pictures of varying aspects, which can be brought into some sort of relation with the anatomical findings.

The significance of the plasma cell infiltration in the pathology of dementia paralytica has now so sharply separated it from the other conditions of dementia that the problem has become easier as its limits tend to become narrower. In Barret's work the tendency has been to conform to the sharp distinctions made by Alzheimer and Binswanger. Bucholz[2] in a study of five cases of insanity on the basis of arterio-sclerosis finds that the clinical picture varies greatly and further that the severity of the clinical symptoms bears no necessary relation to the severity of the anatomical changes. The lesions were not uniform either in localization or character. Fisher and Harlow Brooks[3] consider the subject more from the general medical point of view, attempting to bring its manifestations in respect to the nervous system in close relation to the general clinical picture. They lay rather more stress on the consideration of the finer anatomy of the blood vessel itself. They mention diseased conditions of the spinal cord, in the way of diffuse inflammation, combined disease of various tracts, etc. An interesting observation in this more general way of looking at the subject is found in a paper by Gibson[4] who describes a very striking sensory objective finding in the arm and back of a patient suffering from angina pectoris. During the typical attacks a marked hyperesthesia was found in that region. The real importance of this case consists in the opportunity it affords of giving a clear description of certain facts concerning the afferent impulses from the heart. In the explanation advanced use is made of Head's ingenious theory to interpret the fact that pain is localized, not in the organ affected in all cases, but in the skin. The reason is that the sensory and localizing power of the surface of the body is enormously in excess of that of the viscera, and by what may be termed a psychical error of judgment, the diffusion area is accepted by consciousness and the pain is referred to the surface of the body. This paper is an aid to the understanding of one of the clinical features of angina pectoris.

A very remarkable awakening on the subject of brain tumors might be regarded as a striking incident in the year just passed.

There is a tendency to take stock, as it were, every little while, on subjects under discussion and the important place given to this subject in the discussion at the Philadelphia meeting of the American Neurological Association might be regarded as an evidence of this. The papers by Mills, Frazier and Keen are especially notable, for the reason that they represent more significantly than ever before the great advantage of the physiologically trained surgeon and the neurologist working together towards the solution of a common problem. A monograph containing papers by the first two and by De Schweinitz, Weisenberg and Lodholz[5] entitled Tumors of the Cerebellum contain a great mass of data on this subject. The most interesting deal with the cerebellar-pontine angle group of tumors, the so-called fibro-neuromata. Especial mention should be made of De Schweinitz's[6] paper on the ocular symptoms of cerebellar tumor. What he has to say on the subject of visual acuity is well worth quoting: "It is well known that optic neuritis caused by intracranial growths is perfectly compatible with good visual acuity but if the growth is situated in the cerebellum there is apt to be early great disturbance of vision rapidly proceeding to blindness." The tone of the papers as well as the discussion at the meeting of the American Neurological Society showed a growing confidence in the results of operative interference both as a curative and as a palliative measure. Starr's statement of a short time ago found in his text book, that cerebellar tumors offered no opportunity for successful surgical interference would no longer be accounted true in the face of the progress to be noted in the work already done. Early diagnosis, the collection of accurately observed clinical data, and the avoidance of delay in operating were the key notes of the whole discussion. From the surgical point of view it was interesting to learn that the surgeon was sharply criticised by the neurologist for his failure to make the same advances in operative technique in the operations on the head that had been accomplished in the same time for abdominal operations. Leaving aside a few unimportant details the same technique is used now on the operations for tumor of the brain that was used ten years or more ago whereas in the other operations of surgery the methods of today are radically different from those of a decade ago. To this apparent lack of interest on the part of the surgeon has been attributed the very slow decrease in the mortality of such operations. In the last year or two this criticism is no longer tenable especially of the Philadelphia neurological surgeons and likewise of Cushing of Baltimore. Perhaps this points to the development of specialists in the surgery of the nervous system. The necessity of surgeons trained along neurological lines or at any rate with an interest in the neurological problem they are trying to solve and remedy is apparent. Collier's[7] paper on the false localizing signs in cerebral tumor is

a very helpful contribution to the subject especially as it is based upon 161 cases examined in the laboratory of the National Hospital. Most of the cases came under the author's own personal observation as an illustration of the points brought out in this paper a case may be mentioned presenting symptoms pointing to posterior fossa growth. It was found on autopsy that the tumor was a prefontal one. In explanation it appeared that the left lateral lobe of the cerebellum was pushed into the foramen magnum by the pressure of the tumor. Consideration of such pseudo-localizing signs is of importance in weighing evidence in respect to data of definite as against those of indefinite localizing seizures. Dana[8] describes what he terms cerebellar fits consisting of dizziness and the roaring in the head with inability to stand but without loss of consciousness. These fits last from five to thirty minutes, later there was loss of consciousness, stiffening irregular tonic movements of the limbs. These are cerebellar or cerebellar-pontine seizures. T. Garinger Stuart and Gordon Holmes[9] have written what must probably be considered the most valuable contribution to the subject of cerebellar tumors of the year. A material of forty cases studied in the brief time of two and a half years immediately arouses the keenest attention, not alone on account of the large number of cases but because they have been observed so recently that all the latest work was utilized. In twenty two of these cases the diagnosis was confirmed by autopsy or operation. An opportunity was also given to observe thirteen cases in which the disease was removed by operation which involved large destructive lesions. The positive and negative symptoms of cerebellar disease in relation to the results of experimental research on animals could also be observed. On the subject of cerebellar fits these authors are by no means as positive as Dana though they do not deny the existence of Dana's or Hughlings Jackson's type of fit. Some seizures affecting the trunk and limbs were observed. Ataxia, atonia and paresis in this order appear to be the essential symptoms of cerebellar disease in man. A complete clinical description of twenty two cases in which the diagnosis was confirmed by autopsy or operation is appended to the article increasing very much its value as a clinical document. A note of a paper by Paton[10] on the results upon optic neuritis after operation should be made here. This gives us some of the much desired data in respect to the fate of such cases after operative interference. The need of such information was commented upon in the review of last year. The paper of Walton and Paul[11] should be mentioned if only to call attention to two practical points: When the tumor is not found at the point trephined it is wiser to explore over the surface of the brain than to puncture the brain substance in various directions. Whereas the clinical diagnosis of gumma is frequently made this diagnosis is rare in recent post mortem reports.

The clinical diagnosis of gumma should therefore not deter from operations. It is important to follow a fixed plan of operation in spite of previous failures. The second dictum is of the greatest importance and represents a view already emphasized by Cushing in respect to tumors of the spinal cord. Oppenheim's[12] paper is of permanant value on account of the great care used in the study of the cases reported and the unusually detailed methods of clinical examination. Eleven cases of brain tumor all with fatal outcome form the subject matter of the paper and in every one the pre and post operative history together with the postmortem reports are given. There is a wealth of information contained in the paper as well as the keenest sort of differential diagnostic acumen displayed. In no paper that has recently appeared is the neurological method of a master so impressively shown. Of the many significant points which Oppenheim brings out might be mentioned the value of a reflexion of the cornea. It is never found in hydrocephalus but in tumor. Mention is naturally made of the work of Nonne on Pseudo-tumor Cerebri, a note of which appeared in the review of last year. This is a peculiar symptom-complex simulating exactly the clinical picture of tumor cerebri which either disappears spontaneously or as the assumed result of operation in which no tumor is found. Oppenheim has no solution to this clinical puzzle but suggests that on account of its rarity, the clinical data that are already known about cerebral tumors should not be invalidated by it. He himself has had no case which he felt compelled to interpret as belonging to Nonne's category. In closing his paper he refers to a case of cerebellar tumor of his own which was successfully operated upon and likewise mentions the remarkable series of successful cases which Horsley has published. In view of this he sees no necessity for any pessimism in regard to the operation on cerebellar tumor cases. It is an interesting commentary on the similarity of neurological thought among different nations to note that this was practically the prevailing thought in the discussion which took place at the meeting of the American Neurological Society.

Considerable attention has been given this year to the investigation of the various problems which still cluster about the different phases of Anterior Poliomyelitis. The pathology of this disease in adults as well as children has received some valuable additions which will be referred to in another part of this review. That adults form a more favorable field for the study of this disease than children is apparent and if the type is the same or nearly the same in the one as in the other there is hope that with the accumulation of a sufficient number of facts concerning it the clinical aspect of the disease may come to be understood. It is manifest that at the present time there is little agreement as to the means which will enable us to recognize

anterior poliomyelitis at a time when the acute symptoms are passed, changes in the central nervous system producing these symptoms. Van Gehuchten[13] reports a case with autopsy. The symptoms were a paraplegia of all four extremities, trunk muscles and muscles of the neck. A curious feature was the presence of intense pain in the muscles upon the slightest pressure. The confusion that this might cause for example in a case of suspected alcoholic neuritis is apparent. At the autopsy the most interesting thing found was the participation of the veins in the process. The arteries of the anterior medial fissure were normal until they entered the grey matter. The capillaries of the grey matter are believed to be the principal seat of the initial lesion in both children and adults. It is thus regarded as vascular in type and due to an infection the nature of which is not known. An interesting clinical example of the atypical course of this disease is found in an account of J. Bruening[14] of father and son both attacked by the same disease, apparently based upon a non-inflammatory degeneration of the anterior horns. The interest in cases of this nature lies in the warranted assumption that anterior poliomyelitis can not be looked upon exclusively as an acute infectious process but in some of its aspects it lies well within the limits of the more generally distributed progressive muscular atrophies. An explanation more particularly concerned with the above case, may be found in the idea that there was present both in father and son some degree of hereditary weakness in the cells of the anterior horn. That the whole subject is in need of careful revision can be seen from the case reported before the Societie de Neurologie of Paris by Roussy and Gauckler[1] in which the atrophy was of the typical radicular type of the scapular humeral variety. Baumann's[16] paper is of value because it is based upon a material of 85 cases observed during fifteen years. He has collected some interesting data in respect to the muscles first attacked and also during the months of the year in which the disease is most prevalent though this latter has been done before. Two papers have appeared on the subject of the role of the abdominal muscles in the distribution of the paralysis. Cornell[17] and Ibrahim and Hermann[18]. Both papers are careful clinical reports. Their value is due chiefly to the fact that there has been little mention in the literature of the abdominal muscles being affected, though Oppenheim in the last edition of his text book notes the possibility of its occurrence. Clopatt[19] mentions the fact that there may be involvement of the pupil in the disease and describes a case in which there was a difference in size of the pupil with ptosis on the paralyzed side. This is a rare occurrence and points to the involvement of the cerebro-spinal center of Budge. Probably now that attention has been called to this phe-

nomenon it will be more frequently found. Considerable space has been given to this disease in this review because there has been evidence that a great deal of careful study has been given to it and a considerable number of new facts have been brought out.

There has been no paper on multiple sclerosis of the importance of some of those noted in the review of last year but the increasing interest in the careful study of this disease can be gauged by the large number of papers that have appeared. The whole tendency seems to be toward the recognition of the earlier manifestations and the recognition of the aberrant types. Armend-DeLille[20] reports a case in a child 5½ years old. Raymond and Beauloin[21] one in a young girl 13 years old. The difficulty in diagnosing these early cases is manifest, especially in differentiating them from the various family diseases notably from Marie's cerebellar ataxia and other cerebellar syndromes met with in early childhood. Muller[22] whose monograph on multiple sclerosis is easily the most advanced recent work on the subject in an address before the South Western Neurologist at Baden-Baden on the "Little known forms of multiple Sclerosis" shows how far advanced our knowledge in a clinical sense has become. This paper can be considered to represent the present status of multiple sclerosis. He calls attention to its frequency, the importance of early and atypical cases and especially of the value of the eye symptoms and the comparative rarity of the so-called classical types. The characteristic eye condition usually the atrophic pallor of the temporal half of the disc is the most certain and the most important symptom. Early cases can be definitely diagnosed if there are present, the eye symptoms absence of the abdominal reflexes, the Babinsky phenomenon and a slight uncertainty of the arms in finely intended movements. He calls attention again to the comparative frequency of slight sensory symptoms especially of hypalgesia and notes the cases that begin with pain neuralgic in character particularly in the trigeminal region. It is essential that the aid of a skillful ophthalmologist be invoked in the class of cases he refers to. G. Scherb[23] describes a case in which the Babinsky cerebellar asynergia was pronounced and notes the importance of carefully studying the symptoms pointing to an involvement of the cerebellum. This subject has come to be recognized as a fixed characteristic of what may be considered slight involvement of the cerebellum. Bramwell[24] discusses the prognosis by an analysis of 110 cases which he has studied. This is probably the first attempt of this kind to be found in the literature. In 196 fatal and nonfatal cases the average duration of the disease is found to be ten years and five months. Thirty-five of the 110 cases died, 33 are worse, and 16 about the same, improved 8 and 10 are apparently well. In one case the patient has had the disease thirty-three years. He also gives an

account of four cases in which a cure has to all intents and purposes taken place. Work of this kind brings the whole subject much nearer to the everyday working experience of the neurologist.

An interesting variation from the tabes literature of this year has been the decline of the discussion of the syphilis tabes question. The few papers that have appeared consider the question from novel points of view and are not any longer mere statistical studies depending upon the weight of numbers alone. It is apparent that the work of Erb Lesser and others noticed in the review of last year has for the present at least determined the question. Nevertheless[25] Mendel's paper deserves mention. He gives notes of three cases which bear directly upon the question at issue. A ten year old boy with typical tabetic symptoms whose mother infected by the father has had progressive paralysis for two years. The father himself likewise has tabes. A case of juvenile paralysis with a striking syphilitic heredity and a case of late infection in a man 52 years old who at age of 67 showed evidence of tabes. Hudovering and Guszmann[26] have approached the question in a novel and a highly suggestive way. They examined from a dermatological clinic fifty cases of tertiary syphilis all of whom had received their infection at least three years before. They found the astonishing result that in only 44 per cent. was the nervous system intact, in 46 per cent. tabes and progressive paralysis were certain and in 54 per cent. probable. Two phases of tabes seem to have interested investigators this year, one is concerned with the study of new clinical facts and the other is the consideration of the infantile tabes question. Among the papers belonging to the first category the following are worthy of mention. Marie and Leri[27] describe a case of tabes with atrophy of the muscles supplied by the motor branch of the fifth. In his case there was ophthalmoplegia and blindness, all of which pointed to a basal meningitis which explains for the author the ocular symptoms. There is in this evidence somewhat confirmatory of the meningitic theory of the initial lesion of tabes long ago advanced by Nageotte and others. Gowers[28] believes that the pains in tabes are due to morbid changes in the extremities of the peripheral nerves, a view which is in line with Leyden's theory of the peripheral nerve origin of the tabetic process. It is curious that the theories of the tabetic origin should now and then be given a clinical expression. Cotala[29] attacks the statement made by Rosenbach and others that the abdominal reflex especially in the early stages of tabes is increased. He analyzes a material of thirty-eight cases in respect to the age of the tabes and finds that the relation is not constant. Rather the contrary is found the older the tabes the more likely is the abdominal reflex to be increased if it is present at all. Donath[30] touches the question of the return of the knee jerk in tabes without the presence of a hemiplegia. This was formerly thought to be the only means by

which it could be accomplished. He interprets his case as depending upon a regeneration of the fibres in the reflex arc. The subject of infantile tabes has received much additional data from this year's tabetic literature. This question is of importance for two reasons, first because it necessarily throws some light upon the syphilitic tabes question and second because it is possible to study tabes and dementia paralytica in uncomplicated conditions. The most important paper on this whole question is undoubtedly that by Herz and Lemaire[31] who carefully analyze all the hitherto published cases in which the diagnosis cannot be questioned. Forty-six cases are tabulated in this way. The etilogical factor is without doubt syphilis. The most common mode of onset is bladder symptoms, whereas lightening pains the most common symptoms of the adult form are seldom met with. Blindness is a very frequent initial symptom. The comparative rarity of infantile tabes in proportion to the frequency of infantile syphilis is a striking fact and the authors presuppose hereditary weakness of the central nervous system which together with the syphilis determine in a given case the occurrence of infantile tabes. A very good bibliography adds much to the value of this paper. The final word on the question of the existence of this form of tabes has been said this year in a paper by Koster[31] in which the first case depending upon an inherited syphilis has been carefully studied post mortem. The patient, a thirteen year old girl, showed all the usual symptoms of tabes and progressive paralysis and the autopsy showed without any question that the typical degeneration of the posterior columns were present. This paper in addition brings the infantile tabes question up to date and contains also a description of other cases studied by the author. Grinker[32] reports a case in a family of neurosyphilitics. Closely allied with the question of infantile tabes is that of infantile general paralysis, the existence of which has not been in doubt. As typifying our knowledge of this subject the paper by Vogt and Frank[33] might be mentioned. They bring out these points which differ from the adult form; gradual development, accentuation of the motor symptoms and the rarity and lesser intensity of the grandiose ideas. The subject of the cerebellar syndrome and its relation to more or less recognized types of disease has excited the interest of neurologists for a long time. The subject is as yet somewhat confused especially from the point of view of classification. Two papers on this subject are of interest. Fredereich's ataxia and its relation to or community with the hereditary cerebellar ataxia or the less well known cerebellar atrophy form the subject matter of these papers. Raymond[34] has formulated all the various transitional forms and the two main types into a syndrome depending for its common characteristic upon an affection of the cerebellar system either in the centers themselves or in the different systems. There would then be a spinal type.

Freidreich's cerebeller type Marie, a bulbo type, bullbotuberantial type with auditory symptoms and a generalized type with either or many of these variations. Nonne's[35] paper is comprehensive and contains in addition the anatomical findings in a case previously described by him. The value of this paper consists in the fact that it presents in a chronological order the development of the whole subject and the evolution of the idea that Raymond so aptly lays down in his paper just quoted. Amaurotic family idiocy has received additional data from the papers of Spiler[36], McKee,[37] Buchanan and Shumway. In this series of papers the most interesting point brought out is found in the study of the retina microscopically. The retina showed the typical macular oval patch which has come to be regarded as pathognomonic of this disease. Spiller in the pathological study found very much the same condition of the cells that have been described by Sachs, Hirsch and others, that is a more or less wide-spread involvement of all the nerve cells. Schaffer's[40] paper is an unusually valuable contribution partly because it deals with pathological study of six cases and also for the reason that he used on the study of the nerve cells Bielscowsky's fibrilla stain. His conclusion that the changes in the cell represent a primary disease and that the whole process may be looked upon as an exquisite example of Edinger's Aufbrauchkrankheit that is a disease whose foundation is based upon a performed weakness of structure produced by overuse is of great interest because the contrary opinion as expressed by Sachs, Spiller and others, is that the cell changes are secondary. The importance of the eye muscles in the symptoms of myasthenia have been insisted upon by the writers whose papers on this very interesting disease deserve mention. Spiller Buckman[41] and Frank[42] give accounts of such cases. Burr[12] reports one case with autopsy. It can be said that our knowledge of this disease has not been very materially increased by the work of the year although a considerable number of papers has been published. A paper deserving mention and praise is that by Fraenkel-Hochwart[44] on the Meniere's symptom complex. This paper forms a complete epitome of our knowledge, based upon a careful study of 208 cases personally observed. In almost all of these cases there has been a careful otological examination. Especially valuable is the differential diagnosis, in which brain tumor, tabes, dementia paralytica, arterio-sclerotic conditions of the brain and cord are considered. Its relation to the various neuroses especially to hysteria is likewise touched upon. A valuable addition to the data we possess in a clinical way is found in the description of cases of isolated cerebral polyneuritis with the Meniere symptom complex. Altogether this paper may be looked upon as a type of work in clinical neurology in which the use of large material is productive of a systematization of clinical facts of great value. Berger[45] describes as a clinical entity a case of what he calls polyneuri-

tis cerebralis Menierformis, a condition in which the cranial nerves are affected either with paresis or sensory changes together with the development of the Meniere symptom complex. It is generally one-sided. The recognition of this form will be of assistance in interpreting some of the confusing clinical pictures met with in this region, in which the ear symptoms alone can not explain the picture presented. The interest which the recent epidemic of meningitis has aroused has resulted in a great many papers which however have not added materially to our knowledge of the disease in either a clinical or in a pathological aspect. The so-called posterior basic meningitis of children has thrown however a certain amount of light upon the pathogenesis of hydrocephalus. Hildesheim[46], in a very instructive paper based upon a study of 128 cases attempts to prove the importance of this form of meningitis in the aetiology of the subsequent development of hydrocephalus which was formerly considered to be idiopathic. His paper is not only interesting from the standpoint of his conclusion but likewise because he presents a careful clinical study of the disease. It was noted in the review of last year that the study of the eye symptoms in relation to the clinical picture of which these symptoms are a part deserves to arouse renewed attention. This is not meant in the sense of a study of minor grades of refractive error as a wholesale aetilogical factor in all sorts of nervous diseases but in the sense of seeking to discover the real meaning of eye symptoms as they occur in connection with well recognized types of diseases. Spiller's[47] presidential address at the opening of the American Neurological Association is a good example of this kind of work. The relation of paralysis of associated movements of the eye to definite cerebral lesions proved in some cases by autopsy forms the subject of his paper. This paper is an authoritative exposition of the subject as far as our knowledge goes. Mention should be made of the further progress in the study of the new disease called by Oppenheim myatonia congenita. This is a general or localized hypotonia of the muscles occurring in infants. Spiller's[48] case with autopsy findings the first recorded and Kund's[49] inaugural dissertation make the condition one that now can be said to occupy an assured position in the classification of nervous diseases. Spiller's findings prove that the disease is a muscular one and not due to changes in the central nervous system.

A consideration of the literature on the neuroses entails the selection of papers which are suggestive of advance along the most hopeful lines and this advance may be said to be shown by two tendencies, a more careful study with ever improving methods of the objective symptoms which most neuroses present and the effort to appreciate the psychical elements which are chiefly concerned in their production. This can of course hardly refer to epilepsy which is rapidly progressing to the class of organic diseases. The origins of the phenomenon

are at present of more importance than the psychical symptoms that result. Of the enormous number of papers that have appeared this year on epilepsy it is difficult to select any that have indicated advance. There have been a number of papers dealing with the study of a considerable material in which various questions in respect to age, influence of hereditary, of various periods of development in the life of an individual, the curability and the occurrence of the disease, etc., are considered. Randall[50] records a case of what is called otitic epilepsy which was cured by a successful operation on the ear. This paper is mentioned for the reason that it emphasizes the importance of careful otological examinations as a routine in all epileptics. Spratling has shown the futility of the claims of Gould and others of the close relation aetilogically between very slight errors of refraction and epilepsy. It is very evident that this question is not a dialectic one and that its truth or falsity can only be decided by actual experiments by the way in which the neurologist shall have a share, contrary to Gould's implied wish. Spratling has put this theory to the test in the colony of epileptics at Sonyia and has found that none of his epileptics have been benefitted by the correction even to the microscopical degree advocated by the oculist. The one case that showed some signs of improvement relapsed again into his old condition. Spratling[51] brings this out in a short note. In hysteria the really notable paper of the year from the point at least of novelty and suggestiveness is Freud's[52] careful description of a psychoanalysis of a case of hysteria. Freud's work in the investigation of hysteria by purely psychological methods is much less known in this country than it deserves and his paper this year gives an opportunity to bring out in a more definite manner his great service to neurology. In this paper Freud gives a history of a case of hysteria in which the method has been used for a long period of time, all with most interesting results from the standpoint of origin and development of symptoms. Though the general theory of Freud in regard to the origin of hysteria has not been accepted yet there is no question as to his service to neurology in introducing an entirely new conception of the chief aetilogical factor in hysteria and a method by which this conception can be worked out. Ricklin[53] also makes use of this same method in an analytic study of a case of hysteria. Both these papers represent a tendency much to be encouraged, that is the use of psychological methods in the study of hysterical symptoms. It is certainly an advance over the purely case description in which there was nearly always a tone of wonderment that such things could be and is likewise an advance over the other tendency to force all hysterical symptoms into some sort of lame relationship with material changes in the central nervous system whose existence was assumed.

Friedman's[54] paper deals in a critical way with Janet's work on

psychasthenia and particularly with the role of obsessions. It is a careful study, critical in spirit, of Janet's effort to establish a neurosis apart from hysteria and neurasthenia, a neurosis base dupon fundamental characteristics in the individual. These three papers may be taken as examples of the newer tendencies in the study of functional diseases, that is to submit their symptomatic manifestations to the most careful psychical analysis. It means that we are no longer satisfied with the mere narration of curious symptoms but there is a demand for the understanding of origin and causes.

Any attempt to put in a few lines an account of the unusual activity in the study of psychiatry would be absolutely futile. It is likewise impossible to indicate the advances in this field because they have been more those of method than the increase in definite facts. It may be sufficient to indicate that two subjects have seemed to take up a large part of the interest of psychiatrists. The one is the discussion of dementia praecox and the other that of hypochrondia. There have been numerous papers devoted to the first of these subjects but it cannot be said that there has been any definite decision reached. Sach's[54] paper noticed in the review of last year emphasizes the position taken by him in his opening address before the American Neurological Association. Sachs does not deny the existence of the type described by Kraepelin but suggests that the symptom complex is too complicated to unite into one disease. He also emphasizes the fact that the term dementia is badly chosen for a certain number of these cases recover. De Montyel[55] denies the right of this disease to a distinct place in the classification of mental disease because there is too large a per cent. of recoveries as much as sixty-five per cent. in the class of cases described by Kraepelin. There is a dementia praecox but it is an entirely different type and occurs much earlier. This paper represents the extreme of the negative opinion in respect to the place in the classification of the disease. Parane[56] describes the position taken by the chief psychiatrist in France on the question. His paper is a thoughtful exposition of the whole question from the typical French point of view which in the main is concerned with the accurate description of symptoms and the careful consideration of the type. He says that the Kraepelin idea is accepted in France with some limitations. He likewise calls attention to the fact that the term dementia implies incurability and precocious implies that the disease is one of youth when neither of these limitations are found in the manifestations of the disease. Hecht[57] has written a very readable paper in which the history of the dementia praecox idea is given and the present status of the question as far as it has a status. The account of some typical cases renders the paper more valuable than the usual run of papers on this subject. These few papers are noted simply to show how wide at present is the divergence of opinion. Lipschitz[58] has

written a very exhaustive paper on the aetiological factors concerned in melancholia based upon a large clinical material. In spite of the care used in this study there is the same degree of indefiniteness which for the present at least seems to be natural in discussing etiology in insanity. Bonhoffer[59] in an interesting paper calls attention to the fact that Korsakoc's psychosis may be placed in other conditions than alcoholic polyneuritis. He believes that alcohol alone can not produce the symtom complex. The report of Roy[60] on the subject of hypochrondia at the meeting of the French alienists at the congress of Rennes contains the outline of the papers and discussion read there. It appears that the consensus of opinion was that it could not be considered a separate disease. The awakening of interest in this neurosis may be considered as one of the striking incidents in the literature of psychiatry of this year. Macpherson[61] in one of his Morison lectures discusses the cause and distribution of insanity and comes to the surprising conclusion that external factors have less to do with the causation of insanity than has been believed. Hygienic conditions, alcohol and surroundings are less important than the fact that there is a process inherent in the fertilized ovum acting towards the production of insanity the nature of which is not known. A careful investigation of this kind without any preformed opinion and without the influence of traditions in regard to aetiology is bound to yield interesting results. Kraepelin's [62] discussion on the present day clinical problems should be read as coming from one who more than any other psychiatrist at present sees more clearly into the dangers and weakness of the sharp distinction of clinical types.

Mention in justice must be made before ending the clinical part of this review to two papers by Head and Rivers[62]. One paper an introduction to the other deals with the statement of the problem of the efferent system and the presentation of a new theory to explain the problem and the other with a mass of experimental and clinical data upon which the new theory rests. For the latter a large number of injuries to peripheral nerves in cases of trauma have been carefully examined and the results tabulated in the light of new theory advanced. For wealth of detail, accuracy and skillful interpretation of sensory findings this paper is in a class apart. It is easily the most significant contribution to the literature of the sensory nervous system that has appeared in recent years. The interest in the study of the spinal fluid in relation to disease of the nervous system is now several years old; first started by the French investigators it has rapidly aroused attention among investigators everywhere. Mott[64] in a timely article gives a resume of the whole subject touched here and there by his own critical point of view. He is convinced that the lymphocytosis in tabes and in dementia paralytica is a constant finding but regards the plasma cells as altered lymphocytes. The study of the

fibrillae in pathological conditions has received an impulse since Marinesco's initial work. It must be said however that the results so far obtained have not added much to the knowledge for the reason that the normal anatomy of these structures is by no means clear. Dagonet[65] has studied them in dementia paralytica. Ludlum[66] attempted to produce in the nervous system of rats conditions which might bring them into relation with that found in cases of insanity in man by means of various methods of producing fatigue. His results however are not at all convincing. Marinesco studied the neurofibrillae in the neucleus of the hypoglossus after resection of the nerve and he found that the reaction and repair began around the nucleus of the cell. It might be said that the study of the neurofibrilae both in normal nerve cells and in those altered by disease has not been productive of any new facts that can be accepted as positive and therefore the whole question remains in much the same state as it was a year ago though there has been evidence of a great deal of earnest work.

Batten[68] finds that thrombosis of the anterior horn vessels in anterior poliomyelitis is to be regarded as the primary process and the inflammatory condition of the vessels the secondary thus combating the opinion formerly held which was the reverse of this. Ranny[69] describes the findings in two cases of Friedreich's disease reported clinically by Whyte. This paper is an exceedingly valuable addition to our knowledge of this subject data concerning which has been very meagre. No changes were found in the brain or cerebellum. This finding is rather opposed to the prevalent opinion. The posterior and lateral column changes are believed to be due to the same process. The nervous elements are believed to be primarily involved the interstitial tissue secondarily. Degenerative nerve structure is replaced by neuroglia. The pathogenesis of the disease as well as the selective action of the process whatever it may be is entirely unknown. Saenger[70] believes that the choked disc is a product of increased intracerebral pressure and not due to the toxic action of substances acting on the nerve endings. This authoritative statement will be influential in directing attention to this much discussed subject again. Orr and Rows[71], whose work on the posterior root ganglia is already so well known, have studied the system lesions in dementia paralytica with the view of determining the point of origin of the tabetic process. Their conclusions which are of great interest supports Gower's assumption and is to the effect that tabes is a system disease which begins as a parenchymatous degeneration of the sensory protoneurons starting at the point where the neurilemma is lost. Caminti[72] continues his study of the Gasserian ganglion begun several years ago with the physiology and normal anatomy and now considers its pathology in relation especially to trigeminal neuralgia. After reviewing carefully

the work previously done by other investigators and the facts obtained by himself he comes to the conclusion that the changes found in the nerve cells are secondary especially those which can be said to be due to pressure exercised by the deposit of interstitial tissue, such as sclerosis. If they exist then the ganglion can reasonably be said to be the seat of the trigeminal neuralgia. Robertson and M'Rea[73] have continued their search for the organism which they found in cases of dementia paralytica and tabes; this is a diphtheriod bacillus and is present especially in the urethra. They believe that their work is confirmatory of Orr and Rows noted above. The latter believe that the tabetic process comes about through the influence of some noxious agent in the circulating blood or spinal fluid acting upon the nerves at the point where they lose their neurilemma sheath. The bacillus may be the cause of the toxic agent referred to. Raymond and Castan[74] report the results of eighteen cases of amyotrophic lateral sclerosis studied pathologically at the saltpetriere. This large material did not furnish any new data. The anterior horn cells were everywhere found to be affected in varying degrees of intensity. The anterior lateral tracts were found affected the cerebellar escaping the process. Nothing new in regard to pathogenesis or etiology was noted.

There has been a marked lack of interest in the discussion of the neuron theory this year. This appears strange as for the last few years papers of this sort largely filled the space which could be devoted to anatomy. There is little doubt that the discussion will be again taken up as soon as the proper anatomical status of the neurofibrillae will have come about. Mention should be made here of a very valuable paper by Farrar[75] on the development and the history of the modern technique in the study of the histology of the nervous system. This is a comprehensive account of the whole subject and just at present it may be considered most timely. Timely also is a paper by Muskens[76] which aims to determine in a more accurate way than has yet been the case just what is the relation of the spinal vertabrae to the underlying spinal segments. He did this by selecting four fixed points, the fourth cervical, first, seventh and twelfth dorsal vertebrae driving nails through them and then laying open the cord beneath. Twenty-two bodies were in this way studied. The results obtained show marked variation from the commonly accepted idea and are of especial interest to the surgeon and neurologist in their effort to determine the seat for operation on the spinal cord.

The subject of the toxicity of the blood and spinal fluid in epilepsy especially has been a question upon which there has been a difference of opinion for a long time. Ceni for one believes that in the blood of epileptics there exists specific toxin which can be used to immunize other epileptics against its effect. His results as is well

known have not been confirmed. Donath has by repeated experiments convinced himself that the choline contained in the spinal fluid of epileptics is an important factor in the causation of the epileptic attacks. Buzzard and Allen[76] have made elaborate experiments to find out the truth of this assertion and not only have observed the results clinically but have studied the nervous system of the animals experimented upon pathologically. Their opinion is therefore worthy of consideration. Their conclusions are definitely against the theory that choline has any marked effect either as a cause of the attack or as producing any marked effect on the nervous system in an anatomical sense. Kaes'[78] work deserves mention as showing the place where anatomical research may be made to touch some of the most vital points of interest to the neurologists. He attempts to find some relation between the width of the cortex and the degree of intelligence of the individual. His paper contains careful plots of his results and also shows the method by which his results are obtained. This certainly is a field in which study will give interesting data.

The trend of the better neurological thought may well be indicated in the brief mention which can be made here of therapeutics. The use of drugs in a merely empirical sense is rapidly giving way to methods of physiology, education, training and the use of other measures such as orthopedics and various surgical procedures which increase in effectiveness as the neurologist is enabled to arouse in the minds best fitted to use these methods an interest in the therapeutic problem set before him. In this kind of therapy there lies the future and that it will repay investigation can be seen from the ever accumulating mass of experience which can only be indicated in this place. The papers of Cushing, Frazier, Spiller, Taylor and others will enlighten those whose interest has been awakened. Especially is Cushing's paper on the Special Field of Neurological Surgery suggested as representing the best opinion from the surgeon's point of view. Of the more specifically therapeutic means devised to relieve symptoms the accumulated experience with the use of serum for the treatment of Graves' disease might be mentioned. First advocated by Mobias it has now been extensively used in many different forms. The consensus of opinion appears to be that it serves an important adjuvant to other logical methods such as rest, hygienic and hydropathic measures. As a specific it has not fulfilled the expectations which were at first aroused concerning it.

There has been a marked absence of larger monographs and new text books in this year's literature. Possibly Patton's text book on Psychiatry has been the most ambitious contribution in English. An English translation of Dubois' Psychoneurosis and its Mental Treatment by Jelliffe will give to this work a wider publicity among English readers. Bianchi's treatise on Psychiatry emphasizes the impor-

tance of the Italian work in Neurology and the need of adequate translations into English. Camus and Pagniez monograph on the treatment of Hysteria and Neurasthenia by Isolation and Psychotherapy is to be regarded as a valuable contribution to the newer therapeutics especially as it brings out in a very decided manner the value of persuasion and determines exactly the proper place which the isolation itself should occupy in the scheme of treatment. A new edition of Oppenheim's text book serves but to increase the debt which all neurologists owe to him.

In closing the review of this year's work in Neurology and Psychiatry the author wishes to say that the task of selection becomes each year increasingly difficult on account of the activity displayed by investigators everywhere. The impression left after a general view of the work of one year is that the problems of clinical neurology and to a less degree psychiatry are becoming more intricate, and definite facts of a new sort less and less easy to determine. Further than this it might be said that there is at present a real need to go over the field of facts already believed to be certainly proven in order to test them in the light of the new points of view which the labor of preceding years has made possible.

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GENITO-URINARY SURGERY.

IN CHARGE OF

H. McC. Johnson, M. D.

Judging from the small amount of literature on Edebohl's operation of renal decapsulation for the cure of chronic interstitial nephritis, we must conclude that the results have been disappointing, or, at least, have not been encouraging. Brewer[10] is unable to report any recoveries out of ten decapsulations on five patients.

The subject of surgical treatment of nephritis, however, has not been neglected, as Ayres[1] tells us that in sub-chronic and chronic parenchymatous nephritis lavage of the renal pelves will check the disease and markedly improve the general condition of the patients, in those cases that have not reached the stage known as cirrhotic kidney. According to Johnson[2], in parenchymatous nephritis lavage produces startling results.

The importance of recognizing and treating pyelitis in its earliest stages is brought forcibly to our attention by Kelly[3], who says that the severer grades are often the sequelae of the milder forms of the affections of long standing. The milder forms are best treated by rest, abundant water and urotropine. If there is not a speedy improvement, the next simplest plan of treatment is catheterization of the kidney every two or four days for the purpose of evacuation, distension of the pelvis, irrigation, and instillation. Boric acid and nitrate of silver are the best drugs in this connection. The severer forms of the disease may be treated by irrigation, which often brings temporary relief. As a rule, however, the kidney must be opened and drained; if it has been extensively diseased, it should be removed.

From Johnson's[24] experience in twenty-two cases, he finds that oxaluria or lithaemia is a causative element in the production of symptoms of pyelitis complained of by patients presenting themselves for treatment and that marked improvement follows the first lavage. In pyelitis startling results are obtained by lavage. He prefers the silver salts in a warm saturated solution of boric acid as a vehicle.

Ayres[5] tells us that not enough importance has been given to the probability that a large percentage of the cases of chronic nephritis, in whom no discoverable cause for the inflammation can be found, are really due to extension of inflammation from the renal pelvis, and that lavage will certainly cure a beginning nephritis due to this cause. Cirrhotic kidneys are not influenced, or are made worse.

Sampson[6] has conducted four operations upon the lower end of

the ureter by the extraperitoneal route under local anesthesia, using Schleich's infiltration method. Although the operations lasted for some hours, the only apparent effect, aside from the postural discomfort and at times some pain, was that of fatigue, as from a similar length of time spent in a dentist's chair. Pinching, cutting and suturing the ureter in these cases apparently did not cause any pain. Closing the abdominal wound was the most painful step in all four operations.

In the diagnosis of renal and ureteral calculi, Fowler[7] lays stress upon taking a full, complete and satisfactory history. Tenderness along the ureter upon deep palpation is a suggestive sign. He calls attention to the fact that in uninfected cases the urine between the attacks may be negative. The cystoscope, ureter catheter, and x-ray are all of great service in completing the accurate information.

By attaching one end of the wire stylet in a ureter catheter to a phonendoscope and fastening a metal tip to the other end of it, Cabot[8] has been enabled to hear the grating of the tip against a stone in the ureter as the catheter is passed up. The slightest sounds are carried from the point of contact to the ears. The least contact of the metal end with a stone can be heard with great distinctness and the presence of a calculus determined. We can also determine whether an obstruction in the ureter is due to other causes.

The use of a metallic stylet in the urether catheter with which the ureter is catheterized before radiography is done, when looking for a calculus shadow, has been of signal service to Fenwick[9] in differentiating stones in the ureter from shadows that might be caused by other bodies. Brewer[10] finds that in 41 per cent. of cases giving a clinical history of stone in the kidney, or ureter, the diagnosis was wrong. In order to elicit the cause of these mistakes, he has carefully reviewed the history of thirty-six cases, and investigated the symptoms with reference to pain. He finds that the point of greatest intensity of pain is not infrequently located somewhat below the kidney, and in several instances at or near McBurney's point on the right side, or at a corresponding point on the left. Frequent or painful micturition, occasionally associated with severe tenesmus, was found to be present in one-half of the cases of stone in the kidney. Fever appeared to be a symptom only if the ureter became occluded. Tenderness over the kidney or ureter was a constant symptom. Blood in the urine is usually present at some time, though it may be in microscopic quantity, yet it is often entirely absent at the time of a given examination. The presence of pus in the urine is of very little value in a diagnostic way. The main reliance to diagnosis is the cystoscope and the ureter catheter. The x-ray is of inestimable value in competent hands, if we reject all plates which do not show the outlines of the psoas muscle and transverse processes of the lumbar ver-

tebrae, and in which the shadows of the probable stone are not well-defined.

Through experiments on dogs Bernasgoni and Colombino[11] have demonstrated the feasibility of anastomosing one ureter into its fellow. When in the course of an operative procedure the ureter is accidentally wounded, if the division is a few centimeters from the bladder, the ureter may be pulled down 3 to 4 centimeters and implanted into the bladder. If the division is higher up, either at the level of the iliac or the lumbar region, two expedients presents themselves: (a) a simple section without a loss of substance, or with a slight loss of substance, when we may approximate the divided ends of the ureter and anastomose them according to the method of Van Hook or others; (b) section with loss of ureteral substance, rendering impossible the coaptation of end to end. In this case lateral anastomosis of the two ureters with each other should be attempted.

Vale[12] considers the relative value of the ureter catheter and the segregator, and says there are well defined indications for the ureter catheter, but in the large majority of cases the segregator of Luys will be found sufficient to permit a rigorously precise diagnosis of the functional state of the kidneys and lay down the indications for operation. Boddeart and Luys have entered into quite a discussion as to the relative merits of their own segregators, with the advantage apparently in Luys' favor.

Ayres[13] regards the direct view cystoscope much more useful for ureteral work than the indirect view instrument. He has constructed an instrument which is based on the lens system that is capable of giving both a direct and an indirect view. The difficulty of leaving the ureteral catheters undisturbed upon withdrawing the cystoscope is overcome in his instrument.

Luys[14] also mentions the advantages of the direct view cystoscope and describes his instrument, which is essentially a straight tube without a lens system. As the inconvenience of an instrument of this design is that, as the urine comes down from the ureters it gets into the lumen of the instrument and obstructs the view, he has placed a tube at the lower part of the cystoscope, which, through suction, constantly keeps the bladder dry. The light is placed in the upper portion of the cystoscope to better illuminate the field. With this instrument the true aspect of the vesical mucosa and the ureteral openings may be ascertained. Denis[17] has devised a method for righting cystoscopic images.

From examination of 150 fresh bladders Uteau[15] finds that the measurements of the normal adult trigone usually given are too small. While distention of the bladder increases the area of the trigone, especially in women, contraction of the bladder diminishes it, especially in men. Hypertrophied prostates do not of themselves increase the

dimensions of the sides of the triangle, although they often deform the prostatic urethra and vesical floor. Uterine retroversion alters considerably the inter-ureteric distance, and to a less degree the sides of the triangle.

Sherman[16] tells us that it is only necessary to conserve such part of the bladder wall as surrounds each ureteral opening individually when transplanting the ureters into the rectum and that this is not done with the idea of sphincteric control, but with the idea that the wound of the mucous membrane is made at a reasonable distance from the mouth of the ureter and that the ureteral mucosa itself is left absolutely intact. He reports one successful case of transplanting the ureters into the rectum according to Peters' method, with the exception that he used the catheters in the ureters only as a guide during the operation, and removed them immediately after the transplantation of the ureter into the rectum. There has been no ascending renal infection and the rectum acted well as a bladder for the urine, tolerating it for three to four hours at a time.

Caspar[17] makes a distinction between *genital* tuberculosis, which begins in the epididymis, prostate or seminal vesicles, and extends from there to the bladder, and tuberculosis of the *urinary* tract, which begins in the kidneys and at times descends to the bladder. In numerous cases of tuberculosis of the kidney, which have extended to the bladder, the second kidney remains free from tuberculosis, and it is conclusively proven that renal tuberculosis almost always *begins* unilaterally. For those cases in which tubercle bacilli cannot be found, we must bear in mind that the absence of all bacteria in cystitic urine is most suspicious. An enlarged kidney does not necessarily mean a diseased kidney; indeed it may be the relatively healthy one representing compensatory hypertrophy. The cystoscope does not always present specific pictures in cases of tuberculosis. There exists a cystitis and pyelitis granulosa which much resembles tubercular nodules. The ureter catheter is the most rapid and the most certain aid to diagnosis. Inoperable cases usually die rapidly in course of a few years. Those of renal tuberculosis, which might be, but are not, operated upon, have a bad future. In the majority of cases the disease progresses in the organ itself, then leads to metastasis, and finally extends by continuity to the ureters and the bladder. While this generally obtains, yet exceptionally the process may even be arrested.

In dealing with tuberculosis of the kidney remember, says Kelly[18] that the enlarged kidney found in the loin may be the one functionally enlarged—and, therefore, the only sound organ. Twice has such a kidney, doing all the work of the body, been taken out. There is a great risk of making this mistake.

Lewis[18] describes the uses and methods of manipulating his catheterizing and operative cystoscopes and speaks of his operative work

upon the lower end of the ureter, such as the removal of stones and cutting and dilating strictures.

To Goelet[20] the position of the fixation of the kidney in the operation of nephropexy is most important. Fixation without restoration to its normal position does not afford relief to the symptoms. The unusually low position of a fixed kidney results in congestion and inflammation, because the circulation is retarded in consequence of the lengthening and narrowing of the vessels supplying the organ and the necessary upward direction of the blood current in veins adapted to act normally in the level, and because there is interference with the outflow of the urine, which permits it to accumulate in the pelvis. Goelet strips the kidney of the tissues surrounding it, but not of its true capsule, and after inserting two sutures under the fibrous capsule only, one at the centre of the kidney and the other midway between this and the lower pole, brings the sutures out just below the twelfth rib and ties them over a fold of gauze.

For determining the functional capacity of the separate kidneys Kolischer and Schmidt[21] say the various methods that have, heretofore, been proposed have been found wanting. Even cryoscopy of the urine and blood is faulty. The estimation of urea, and certain staining fluids, have given unsatisfactory results. The test of electric conductivity of urine is not reliable. By passing indigo-carmine through the kidneys and then applying the electric conductivity test they have attempted to supply this deficiency.

On the other hand to Krotoszyner and Willard[22] the three tests generally employed to determine kidney function (cryoscopy, phloridzin, and urea estimation), have been valuable aids, diagnostically and prognostically. Whenever they find in separately catheterized urines great differences in cryoscopic urine points, in sugar excretion, and in the amount of urea, they feel justified in concluding that little or no work is done by the diseased kidney, and that the other side is responsible for existing urinary function. They lay particular stress upon the fact that all three tests must coincide, and must show good, or, at least, fair points on the remaining side before nephrectomy is permissible.

According to Freyer,[23] age is no contraindication to prostatectomy. It is the general condition, and especially the state of the kidneys, that must furnish a guide for operation. He reports seven cases of prostatectomy on octogenarians and one on a patient seventy-nine years of age, with seven recoveries and one death.

Ruggles[24] tells us that the internal vesical sphincter is quite weak in health, and as soon as three or four ounces of urine have collected in the bladder, it relaxes, and permits the urine to pass down, filling the posterior urethra until it meets the resistance of the external sphincter. The function of the vesical or internal sphincter, is then at an end until

after the next act of urination. So that to explain incontinence after prostatectomy satisfactorily, we must look to paralysis, partial or complete, of the external sphincter. He, therefore, suggests, that if perineal prostatectomy is performed, the incision into the urethra should be as close to the prostrate as possible, exactly on the median raphe of the compressor urethrae, and the utmost care must be exercised to avoid stretching and laceration of the muscle.

Proust[25] finds that partial prostatectomies, such as the removal of a median lobe, are to-day almost completely given up. The mortality of the partial operation is high and the results indefinite. Because of these results, it is almost universally superseded now by total removal of the gland. While the mortality of the supra-pubic route is greater than in the perineal, the post-operative complications are less numerous. Notably, incontinence of urine and decadence of the sexual power is not observable; and the efficacy of supra-pubic prostatectomy is equal if not superior, to the perineal.

Young[26] speaks for the preservation of the urethra and the ejaculatory ducts in cases of prostatectomy. Much stress is laid upon preliminary cystoscopy. In cases where a general anaesthetic would be dangerous, spinal cocainization has proved of great value. The principles of the after treatment consist in keeping the kidneys very active by means of water by mouth, subcutaneous infusions, or rectal normal salt injections, in getting the patient up as soon as possible, in early removal of the gauze and tube drains, and in avoidance of instrumentation. For those cases who have frequency of urination after operation, Young observes that there is diminished bladder capacity, and has obtained good results from forcible hydraulic dilatations. By stitching the seperated levator muscles together in front of the rectum at the time of operation, in his last 25 cases he has been enabled to avoid rectal fistulae. Epididymitis or incontinence of urine as a complication is rare.

According to Follen Cabot[27] an operation for hypertrophy of the prostate should be undertaken on the earliest evidence of urinary obstruction. The habitual use of the catheter by prostatics should be relegated to the rear. Long before such a practice has become necessary, the prostate should be enucleated. We would thus operate on patients in fairly sound condition, instead of those with most of their vital organs damaged. For those cases in too bad a condition to stand an immediate prostatectomy, the bladder should be opened supra-pubically, or by the perineal route, for drainage, vesical lavage and general treatment. If this slight operation has not proven too much for them, a complete operation can be performed later on. If they do not survive the simple drainage, they certainly would not recover from a prostatectomy. Sounds for dilatation of the prostatic urethra

do more harm than good. A cystoscopic examination of the bladder at the time of, or just before the operation, is of decided advantage, if easily executed. Some patients cannot be cystoscoped, and so no prolonged effort should be made to do so. Where other conditions are favorable, perineal prostatectomy is the operation of choice. Fifteen cases without a death are reported. It is noteworthy that he does not use any kind of packing for the wound, employing a large rubber tube, of forty or more French, placed in the bladder through the perineal wound.

Lewis[28] condemns orchidectomy, vasectomy, ligation of the internal iliacs, injection of carbolic acid, application of electricity, and allied methods, and says that the Bottini operation should seldom, if ever, be adopted. Prostatectomy is the procedure of choice and the preferable route is through the perineum, the preferable method that of Young or one of its modifications, but much depends upon the skill of the operator as regards the method employed. In patients with foul bladders and diseased kidneys, who, we have reason to expect, would not stand an extensive operation, thorough drainage should be first instituted either by supra-pubic or perineal incision under local anaesthesia, to be followed later by enucleation, if deemed advisable. The use of local anaesthesia, especially spinal cocainization, is of great value, and should be more extensively employed.

From an experience of thirty-six cases, Chetwood finds that "contracture of the neck of the bladder" is a common cause for vesical obstruction; its relief is safe and sure by his method of galvano-prostatotomy through a perineal opening; and it is often an explanation for what has been termed *prostatism without enlargement of the prostate.*

According to Keyes, Jr., "contracture of the neck of the bladder" exists as a strictured condition entirely independent of the prostate and yet prostatic hypertrophy may be coincident with it, so that a prostatectomy may fail to relieve until the stricture is operated upon. The operation most suited for this condition is the galvano-cautery through a perineal incision, after the method of Chetwood.

Recognizing that in carcinoma of the prostate cure can be expected only from radical measures, Young has undertaken removal, in four cases, of the seminal vesicles, vasa deferentia, and most of the vesical trigone with the entire prostate, and says the procedure is simple and effective, and markedly satisfactory functional results follow. His method of operating is the same as that employed by him in prostatectomy until the under surface of the prostate is exposed. Instead of now opening the prostatic capsule, the urethra anterior to the prostate is exposed and completely divided transversely. The prostatic attachments are now divided anteriorly and laterally, completely severing the prostate form all important attachments, except posteriorly.

The now mobile prostate being well out of the wound, by depressing the tractor and making strong traction, the anterior surface of the bladder is exposed and incised at a point in the middle line about 1 cm. behind the prostato-vesical junction, this division being continued on each side until the trigone is exposed. The ureters are now found and the line of incision carried across the trigone so as to pass 1 cm. in front of the ureteral orifices. The seminal vesicles and adjacent vasa deferentia are freed anteriorly as high as possible and divided, thus removing the entire prostate with its capsule intact, the seminal vesicles, 4 cm. of the vasa deferentia, and a cuff of the bladder. The anterior wall of the vesical opening is caught with forceps and united to the membranous urethra. The remainder of the vesical wound now presents as a longitudinal opening, which is closed by sutures. The wound is lightly packed with gauze, the levator and muscles drawn down together in front of the rectum and the skin sutured, except in the angle in front, for exit of the gauze drain. The catheter is put through the meatus into the bladder.

From a study of many prostates Motz and Perearnau[32] inform us that we find the adenomyomatous productions, which constitute the essential lesions of hypertrophy of the prostatic region, more frequently in the aged, and that these are developed at the expense of the peri-urethral glands which are separated from the true prostate by an intra-prostatic sphincter; that in the large and medium hypertrophies, the prostate properly called is pushed back to the periphery, it is more or less atrophied, and constitutes the pseudo-capsule, that which is supposed to be the capsule left when a complete prostatectomy is done. In most prostates with adeno-myomatous productions there are also some inflammatory lesions, which are co-incident. Chronic prostatitis is rarely the cause of complete or incomplete retention of the urine.

Of much significance is the timely warning of Courtney,[33] who calls attention to the numerous mistakes made in confusing the bladder and kidney symptoms of locomotor ataxia with those produced by stone in the bladder or kidney, or by prostatic hypertrophy. The first reflex mechanism to be attacked in locomotor ataxia is largely fortuitous, and the primary point of election may lie in the bladder, as logically as elsewhere. Remembering this, the surgeon will save himself from many a regretable operative interference and his patients from ordeals which they can ill afford to undergo. A great many of the vesical and renal crises of locomotor ataxia bear a close superficial relation to the conditions obtaining in cases of vesical and renal calculi; and many others, in the same surface way, practically parallel the clinical features of hypertrophied prostate.

Evans and Fowler[34] write upon punctured wounds of the urinary bladder, and report a case in which there was a double puncture of the bladder through the perineum, with laceration of the anterior wall of

the rectum. Immediate laparotomy was performed, the bladder and peritoneal rent closed, and the abdominal cavity washed out and closed. A retention catheter for drainage was placed in the bladder through the large perineal wound. Fourteen days later the laceration of the bladder, rectum and perineum was repaired, the patient making a complete recovery.

In three cases of general gonorrheal infection investigated by Wynn[35], gonococci were demonstrated in the joints and lungs and on the valves of the heart. Sufficient evidence has accumulated to show that in these cases there may be a direct infection with the gonococcus itself, an absorption of a toxin, gono-toxin, or a mixed infection with other germs. In pyemias of obscure origin, a routine examination of the urinary organs, and especially of the prostate, should be made. A positive diagnosis may be made from cultures of the blood.

Fuller[36] is inclined to the view that gonorrheal rheumatism has the gonococcus for its cause only in a secondary manner; that through the localized inflammatory reaction which arises from the presence of the gonococcus in connection with the mucous membrane other germs enter the system, the result being the usual groupe of septic symptoms classed under the clinical heading, gonorrheal rheumatism. He even holds that gonorrheal rheumatism, so-called, can exist entirely independently of the gonococcus. He is of the opinion that the systematic infection in the male usually enters from a special focus, and that special focus is represented by a seminal vesiculitis. He has subjected four cases to seminal vesiculotomy and almost immediately in all of these cases the active symptoms of gonorrheal rheumatism wholly disappeared. At the end of a very short time they were entirely free of their rheumatism.

In acute suppurating arthritis of gonorrheal origin, Gilliard[37] employs puncture followed by intra-articular injection of sublimate, or, better still, sublimate lavage. It is especially applicable to the knee and relieves the pain even in those cases where great distension of the joint is rapidly produced after the lavage; it reduces the fever; it does away with prolonged immobilization and consequently irremediable adhesions. In severe cases several sittings are necessary, never more than three. No case of ankylosis has occurred in his results. The treatment is recommended for acute blennorrhagic arthritis only, and not for cases of arthritis with streptococcus or staphylococcus infection.

The investigations of Oppenheim and Loew[38] lead them to conclude that retroperistaltic movement of the vas deferens is the determining factor in the causation of epididymitis. Irritations and injuries of the posterior urethra set up a retroperistaltic movement of the vas

deferens, and thus infection is rapidly transmitted to the epididymis, causing inflammation of the part.

Valentine[39] answers the criticism of those who denounce irrigations in gonorrhea. He says that when a patient with acute anterior gonorrhea comes under treatment before the adnexa are involved, he will escape complication, if irrigations are cautiously, skillfully, gently and judiciously employed. The pain is promptly arrested, discharge reduced, and the course of the disease abbreviated. No other form of treatment will relieve pain and reduce the discharge as quickly as do properly administered irrigations. The irrigation treatment, like any other treatment, is positively dangerous, unless employed with caution, tact and gentleness.

Harrison[40] mentions several cases of urethral stricture in which a false passage was made from the bulbo-membranous junction to the bladder, the urine drawn and subsequently voluntarily passed through this false passage, the patients doing fairly well. The last case came into the hands of Harrison and the natural channel was restored by operation.

In a large number of cases of abscess of the perineum, in which the pus seems to be altogether below the triangular ligament, and to be limited to the perineum, according to Alexander[41] there are also foci of suppuration situated above the triangular ligament. These latter are found in the prostate, and alongside of the membranous urethra posteriorly. They seem to originate in the glands of the prostate, the glands of Littre, or the glands of Cowper. These collections of pus do not always communicate with the perineal abscess, or at least there is no apparent communication. In treating these cases, after making the usual median perineal incision and opening the membranous urethra to the prostate, a careful and systematic exploration is then made for any foci of suppuration; and it is sometimes useful to make counterpressure with the finger of the other hand in the rectum upon its anterior wall during the examination, when all foci may be found and freely opened.

Gatti[42] has demonstrated from experimental operations the feasibility of grafting one testicle upon the other. The anastomosis, properly applied, preserves not only the vitality of the glandular tissue of the testicle, but even its function as well, the spermatozoa being abundant and endowed with normal movements. The operation is indicated in cases of operative or traumatic injuries to the deferent canal of a healthy testicle.

Rosenberger[43] finds from experiments on English-web and soft rubber catheters of various sizes that exposure to formaldehyde in a closed vessel will sterilize these instruments in twenty-four hours, or

keep them sterile indefinitely after they have been boiled and placed in an air-tight container, without injury to the texture or the fabric. The method employed was to expose the instruments to 5 c. c. of formaline upon absorbent cotton which was placed in the end of an air-tight metal tube containing the infected or sterilized catheters.

In examination of the urine Cabot[44] gives us timely warning that we are depending too much on our means and instruments of precision in diagnosis. If we depend upon the ordinary findings we are liable to mistake senile and arterio-sclerotic degeneration for chronic nephritis, while in conditions involving passive congestion or acute degeneration of the kidney the urine occasionally simulates that of acute nephritis. Even in cases where no lesions are to be found at autopsy, the urine is occasionally highly albuminous and full of casts. In acute glomerular nephritis, in some cases of subacute and chronic glomerular nephritis, and chronic interstitial nephritis, our means of diagnosis are often at fault. The vast majority of estimations of urinary solids, including urea, are in Cabot's opinion a waste of time. The attempt to estimate the anatomic condition of the kidney by the measurement of albumen and the search for cases is fallacious in the extreme.

The most reliable data about urine are those most simply and quickly obtained—the twenty-four quantity, the specific gravity and color.

Young and Churchman[45] tell us that in order to distinguish between the smegma and tubercle bacilli in urine, the staining methods are faulty, animal inoculation is tedious, and cultures are unsatisfactory. The method of cleansing, by washing the glands and irrigation of the urethra, gives a sure means of eliminating, in the male, the smegma bacillus as a confusing factor in the microscopic diagnosis of genital and urinary tuberculosis.

Ravold[46] gives a test for albumen in the urine which he says is ten times as delicate as the nitric acid test. Corrosive sublimate, 2gm.; succinic acid, 4gm.; common salt, 4gm.; water, 50 c. c. Heat. This is added to 50 c. c. of a saturated solution of sulphate of magnesium. The urine is first acidified by adding 1 c. c. of acetic acid to 5 c. c. of urine; filter. Then, by the aid of a pipette, the urine is slowly floated down upon the surface of the reagent in an inclined test tube. If a ring of albumen appears, then heat. The albumen will not disappear.

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LARYNGOLOGY AND OTOLOGY.

IN CHARGE OF

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In this brief and necessarily incomplete review of the rhinological and otological literature of 1905, reference will be made, only, to the most important contributions.

The accessory sinuses have again been the subject of much discussion. From his studies of the nose and the accessory sinuses in the American bear Ingersoll[1] finds that some of the numerous branches of the ethmoidal turbinates extend into each of the accessory cavities of the nose and so, in the bear, the accessory sinuses are a part of the olfactory portion of the nose. In man the sinuses themselves are almost shut off from the nose by the contraction of their ostia and their functional activity is lost. Therefore, Ingersoll believes the accessory sinuses, in man, to be simply rudimentary structures. The radiograph has recently been employed in diagnostic work on the sinuses. Coakley[2] has taken quite a number of radiographs which enabled him to very accurately outline the sinuses A symposium[3] on sinus disease presented at the annual congress of the American Laryngological Association at Atlantic City and the discussion which followed shows that there is still considerable difference of opinion as to the best methods of dealing with the chronic cases. The weight of opinion seems to favor the intra-nasal route of opening and draining the antrum. The majority of the average chronic cases can be brought to a successful issue by simply making a large opening into the autrum through the inferior meatus. In the more chronic cases when there is denuded or necrosed bone with considerable thickening of the mucous membrane lining the antrum more radical measures will be found necessary. The Caldwell-Luc operation is still favored by some. Denker[4] has modified this operation in that he carries his incision through the soft parts covering the anterior wall of the antrum across the median line, separates and elevates the muco-periosteum from the lateral wall and floor of the nose, removes the antral nasal wall in the inferior meatus and part of the nasal floor. The opening in the canine fossae is made large enough to allow a thorough inspection of every portion of the antrum. He agrees with Kretschmann that it is not necessary to remove every vestige of mucous membrane as recommended by Killian and others. He has found that the mucous membrane is capable of regenerating or returning to normal even if

marked changes have taken place. After curretting the antrum a flap is made of muco-periosteum covering the lateral wall of the inferior meatus and is placed in the floor of the autrum and held in place by gauze tampons. The oral wound is closed by sutures and all after treatment is carried on through the nose. Gerber[5] opens the antrum in the middle meatus, enlarging the natural opening to extent of removing all the nasal-antral wall in the middle meatus.

As for the frontal sinus, the external operations of Killian and Coakly have their advocates. Both are open to the objection of more or less deformity. This Prof. Killian has overcome by the injection of paraffin. Ingalls[6] has described a new method of draining the frontal sinus through the nose. His method consists of passing a steel pilot through the natural canal into the frontal sinus and running in over this a hollow burr by which a canal 6 m.m. in diameter is made and then inserting into this canal a self-retaining gold tube so large that the pus will necessarily drain and that the patient may easily wash out the sinus. The advantages claimed by Ingalls are: 1. It causes no scar. 2. It affords sufficient drainage and enables the patient himself to cleanse the sinus. 3. It is much safer than other intranasal methods. 4. It can be done early before pathologic changes have taken place and in such cases it may be expected to effect a cure. 5. The early establishment of free drainage usually prevents serious pathologic changes. 6. It is no bar to a later external operation if that should become necessary. Indeed, by taking the place of a part of that operation, it renders it less formidable.

The endo-nasal opening of the sphenoidal cavity with a burr after removing the anterior half of the middle turbinate is recommended by Stoeckel[7]. The entire anterior wall of the cavity is thus removed and the cavity is then packed with gauze. Halsey[8] gives a post mortem report of a case of encephalitis following a chronic empyema of the sphenoidal cavity. He was able to find only sixteen other cases of the kind reported

The ocular symptoms of affections of the accessory sinuses as given by Posey[9] are: 1. Disturbances in vision and the visual field. The involvement of the optic nerve as a consequence of ethmoidal or sphenoidal sinusitis may vary in degree from a simple edema to an active retrobulbar inflammation. 2. Changes in the orbit. A chronic distention of a sinus (hydrops) may occasion a dislocation of the globe. In affections of the sphenoidal sinus involvement of the ocular muscles is not uncommon. Ethmoidal disease chiefly manifests itself in the intraocular disturbances and in the production of asthenopia by interference with the extraocular muscles. 3. Affections of the lachrymal apparatus, especially pre-lachrmal abscesses. 4. Affections

of the lids, especially edema of the upper lid on the nasal side. 5. Affections of the extra-ocular muscles Paresis and even paralysis of one or more of the eye muscles may occur as a consequence of sphenoidal sinusitis. Posey also considers affections of the conjunctiva, of the cornea, of the uveal tract, pupillary changes, cataracts, errors of refraction, asthenopia, headache and neuralgia, referable to sinus disease.

Snow[10] believes that 80 per cent. of the cases of Tic-Douloureux arise from intranasal pressure and sinus disease. He also believes that many neuralgias and headaches are from similar causes, mentioning the middle turbinate, "seemingly innocent" as often the cause. Canfield[11] reports three cases of tri-facial neuralgia due to intra-nasal causes and which were relieved by intra-nasal treatment.

Probably no other subject has received so much attention as that of the correction of septal deformities. The sub-mucous resection method is becoming more popular both in this country and abroad, especially so with the younger men. The chief objections to this operation have been the difficulty of the technic and the length of time required to complete the operation. Another factor was the amount of shock following the "trying" operation which often required an hour or more. A number of instruments have been brought forth which greatly simplify the technic and greatly reduce the length of time required to complete the operation. Ballenger[12] has devised a swivel knife with which the cartilage can be removed in one piece. Ballenger believes the average time for doing this operation ought not to be more than ten minutes. He himself has performed the operation in four minutes, includding the removal of the bony septum. Hurd[13] has described a down cutting forceps for removing the septal ridge. The advantages of the forceps over the chisel are that they remove the septum with a much more smoothly cut surface and no assistant is required. The time of the operation has also been considerably reduced in that it has been found that stitching of the mucous membrane is not necessary. Up to the present time no ill effects, such as sinking in of the nose, have been reported, except the case mentioned by Menzel and Mueller in which the cartilage had been removed from under the lateral cartilage. To be mentioned in this connection is the submucous resection of spurs which is now being pretty generally followed.

The subject of hay fever has not received as much attention as in the preceding year. Dunbar[14] claims that the chief cause of the failure of American physicians to get uniformly good results with Pollantin was a too abundant use of the remedy. In a very lengthy article he gives the present status of his discoveries. Leob[15] reports

good results from the use of Pollantin in a series of cases. Denker[16] working on the idea that under other factors in the causation of hay fever a sensitive condition of the nasal mucous membrane is necessary. The author has endeavored to reduce this sensitiveness by a massage of the mucous membrane. This was done by dipping a cotton-wound applicator in a solution consisting of cocaine mur. 1.0, adrenaline chloride 0.01, aquae 10.00, or first spraying the nose with a 1 per cent. solution of cocaine. The massage was done by rubbing the mucous membrane with a cotton-wound applicator dipped in a 1—10.0 Europen oil. During the first days the sittings were for two minutes only, later, from four to five minutes for each nasal cavity. If the improvement of the eye symptoms did not go hand in hand with the nasal, a few drops of equal parts of tint. Opii crocata and aqua Destil. were instilled into the conjunctival sack. Of the eight cases so treated three remained entirely free and three others had slight attacks the following year. In the other cases no improvement followed. Urbanschitz[17] also reports good success from massage of the nasal mucous membrane. He employed an electric masseur described by him. Sterns[18] treats hay fever with bicarbonate of soda powder or saturated solution. The administration of this may be preceded by an application of cocaine. The bicarbonate of soda mixed with some agent (sodium chloride) will diminish or abolish its irritating action. The toxine already absorbed may keep up the symptoms for a time. Hence the treatment, according to sterns, will not at first appear to be a specific. How[19] has found intra-nasal deformity in one or more of its many forms in a very large percentage of hay fever examined by him. The malformations consisted of deflected and thickened septa, septal spurs, hypertrophied and cystic turbinals, polypi and polypoid degeneration and bony and membranous synechia. One or more of these have complicated almost every case. The nasal defects were most frequently found in the upper and anterior portion of the nasal passages. The hypertrophies were real or tissue rather than vascular. The bulging or local pressure on the lateral walls in narrow nasal passages. In other cases a deflection of the septum pressed its thickened portion against the middle turbinal and lateral wall on one side. These pressure areas, due to thickened and deflected septa seemed to be the chief nasal defects in the cases How operated on and he believes it is the mechanical interference with nasal circulation that makes possible the severe symptoms of hay fever.

A new method of treating acute coryza is advocated by Henle[20]. He has applied the "Bier's constriction" to the neck in six cases, with good results in five. He found that a pressure of 50-60 m.m. as recommended by Bier in other parts of the body could not be borne around

the neck. Twenty-five m.m. was sufficient to produce the result. The pressure was applied for from one to three hours. In the one case in which the treatment failed a chronic hypertrophic rhinitis was present. There was no discomfort from the bandage.

A new method of treating ozena and other atrophic conditions of the nose and pharynx is advocated by Sonderman[21] which consists of producing a negative pressure in the nose and pharynx by suction. This is done by means of a pump devised by the author. A loosening of the crusts results and the secretions are drawn from the accessory cavities. The hyperaemia which results also has a decided beneficial influence. Spies[22] also reports good results from this method. Newcomb[23] has been experimenting with the mucin treatment advocated by Low during the past two years, and believes it to be a valuable addition to our list of remedial agents. Faalberg[24] treated 60 cases of ozena by injecting paraffin into the inferior and middle turbinates with the result that 20 were cured, 35 very much improved and 5 remained the same or had disappeared. Burger had seen no improvement when there was much atrophy. Iglauer[25] has devised an operation for the introduction of a permanent canula between the mouth and nose, so as to allow the patient to force the saliva into the nose at frequent intervals. The saliva not only moistens but cleanses and stimulates the interior of the nose. He reports three cases of atrophic rhinitis in which he performed the operation. The results he believes to be satisfactory enough to warrant a further trial of the method.

The question of packing the nose is still undecided. Some authors pack the nose after all operations on the turbinate and septum, others pack only after septum operations. Coronshitzki[26] always packs the nose after operation and employs styptic cotton prepared by immersion in a solution of sesqui chloride of iron of a specific gravity of 1280. The excess is squeezed out and then the cotton is dried. He has used the cotton in two thousand cases without any ill effects. The tampon is left in twenty-four hours. There is no irritation following their use. Fredenthal[27] reports a death due to careless plugging of the nose. The tampon had been employed to arrest a hemorrhage. The plug had been forced into the antrum and death was due to sepsis. Fredenthal administers from 0.006-0.01 of stypticin from four or five times daily after most nose operations. Wilcox[28] advises the employment of large doses of calcium chloride by mouth or rectum. He reports a severe case of nasal hemorrhage in which 40 gr. were given daily with good results.

The galvano-cautery has received more attention during the past year than usual. Anderson's[29] paper read before the American Laryngological, Rhinological and Otological Society points out the many

disadvantages of the cautery and believes that the more modern methods in dealing with diseased conditions of the nose have almost entirely supplanted the cautery. In intumescence of the inferior turbinal he employs the "sub-mucous puncture." A sharp cataract knife is inserted under the mucous membrane parallel with its surface and close to the bone. The knife is inserted about one-half inch, the distance depending on the size of the turbinate. The sharp edge of the blade is then turned toward the bone, drawn along its surface, then turned outward and the end rotated in order to destroy a portion of the vascular sinus tissues. The knife is then withdrawn and a pledget of cotton saturated with adrenaline is applied over the bleeding point. After all bleeding has ceased the wound is sealed with collodion, or the nose may be packed. This procedure distroys enough of the vascular tissue to cause cicatricial contraction with relief of the obstructions without the sacrifice of any mucous membrane. In hypertrophic rhinitis the author employs a flap operation, removing a wedge shaped piece of the turbinate and suturing the edges or holding them in place with a pack. The suture being used when the line of incision is sealed with collodion. He believes that the cautery has a place in the treatment of hypersensitive areas in the nose in certain neuroses of nasal origin; but even here it is used in a tentative manner without well defined indications. Kopetzky[30] also condemns the cautery as ordinarily used, but advocates the sub-mucous cautery in hypertrophy of the inferior turbinate. He has described a sharp pointed cautery knife, which he introduces beneath the mucous membrane as close to the bone as possible. After the knife has been inserted the electric current is allowed to pass for a few seconds only, and the instrument is at once entirely withdrawn from the nose before it cools. A slight dressing of cotton moistened with a 1 per cent. solution of protargol is then applied to the entire turbinate. The reaction which follows is very slight. The advantages of the sub-mucous cautery are: 1. A lesser amount of cocaine is required for anesthetic. 2. Short time required for the procedure. 3. The after effects and reaction are practically absent. 4. Danger of synechia formation is absent. 5. There is no scabbing or crusting. 6. No destruction of epithelium or functionating structures in the tunica propria. 7. The method effects relief of nasal obstructions, from hypertrophy without interfering with the contractile action of the turbinate, in that it introduces a re-inforcement of the connective tissue strata with scar tissue, without extending this connective tissue to the surface of the turbinate body. 8. Results have proven uniformly good and from present indications the results obtained seem to be permanent.

Fridenberg[31] thinks the relation of gastro-intestinal disease and

malnutrition consequent to many affections of the upper respiratory tract have not received due consideration. The lack of taste, anosmia, deficient aeration, all have their effect upon the appetite. Nasal obstruction leads to "bolting" food and mouth breathing alters the saliva. The effect upon digestion of swallowing abnormal secretions is well known.

As to the paraffin treatment of nasal deformities, Welty[32] reviews the literature and points out the serious results that have followed these injections. He claims that all cases of saddle-nose can be corrected by bone implantation. He reports a case in which he removed a portion of the crest of the tibia and implanted it in the nose. The result was very good. The histological examinations made by Eschweiler[33] show that the paraffin becomes absorbed and is replaced by connective tissue; just how this is accomplished is not definitely known.

Meierhof[34] recommends the use of a pair of dressing forceps as a safe instrument for opening retropharyngeal abscesses in children. They should be of a length best suited to free manipulation and which are bent on the flat with the beaks somewhat curved and moderately pointed. The child should be held in the upright position. When the forceps have entered the abscess, the child's head and body should be thrown forward; while in this position the forceps are withdrawn with the blades opened, thus allowing the abscess to be thoroughly evacuated and good drainage established.

Libram[35] reports in detail two cases of erosion of the carotid following peritonsillar abscess one of which ended fatally. He was able, also, to find reports of 23 other cases. Of these, 15 ended fatally, in one the definite result was uncertain. He points out the possible danger of opening peritonsillar abscesses under unfavorable surroundings. If an erosion of the carotid is suspected the common carotid should be ligated. He also describes in detail the effect of tieing the common carotid. According to Thompson[36] the sight of election for opening a peritonsillar abscess is just external to the intersection of an imaginary line across the base of the uvula and another vertically along the anterior fancial pillar. Thompson claims the best instrument with which to open the abscess cavity is a pair of Lester's sinus forceps or a modification of the instrument as devised by the author. The blades are forced into the cavity and then opened widely and withdrawn, thus producing a vertical opening through which the pus escapes into the mouth. There is no danger of wounding any of the larger vessels with this instrument.

Preobrashensky[37] emphasizes the fact that the lungs are not always at fault where there is an expectoration of blood. He points out that the blood, even when expectorated in considerable quantities may

come from the nose, pharynx or larynx. He reports sixteen cases of hemoptysis having their origin in the upper respiratory passages. In eleven the bleeding had its origin in the pharynx and naso-pharynx, three in the larynx and two in the trachea. He concludes that: I. The origin of hemoptysis is more frequent in the upper respiratory passages than is commonly believed. 2. Most often the bleeding has its origin from some localized inflammatory area or from a dilated vein. 3. When a proper diagnosis is made the hemoptysis can be as a rule permanently cured. 4. The quantity of blood can not be taken as a criterion as to its origin as profuse bleeding may come from the pharynx.

Semon[38] calls attention to the confusion in the medical terminology of the acute septic inflammations of the throat and neck. He believes that the diseases which are now known as acute glossitis, of oedematous pharyngitis and laryngitis of acute oedema of the larynx, of abscess of the larynx of phlegmonous pharyngitis and laryngitis, or erysipelas of the larynx and Angina Ludovice, should be from an etiological point of view, classified under one heading, viz.: acute septic inflammations of the throat and neck, thereby greatly simplifying matters. The main symptom in all of the above mentioned diseases being the same—that is, inflammation with a large amount of oedema. This inflammation can be brought about by any of the various forms of staphylococci and streptococci, bacterium coli, the bacillae pyogenous foetidus, the tetraginous and others. The present terminology is based only on the particular location of the infection and the beginning of the process. He also calls attention to the seriousness of these cases, with their usually rapid and fatal termination. He advises a bacteriological diagnosis when possible, though owing to the rapid course of the process it is often not practical. He mentions two cases which were saved by the injection of streptococcus serum, which should always be given a trial as no danger can come from its use if the process be the result of some other infection. French[39] reports a case of acute septic inflammation of the throat and neck in which the edematous swellings were dispersed by the free application of 1-5000 adrenaline solution every hour. The case recovered.

Heuking[40] reports six cases of severe hemorrhage following tonsilotomy. In each instance he found that the hemorrhage had its origin in a wound on the posterior pharyngeal pillar. Heuking believes the findings throw a new light on the etiology of a large number of severe hemorrhages following the removal of the tnosils He accounts for the frequent wounding of the pharyngeal pillar in that during the act of gagging a contraction of the palato-pharyngeal muscle occurs throwing the tonsil with the pillar forward, thus a por-

tion of the pillar is easily caught in the tonsillitome. He believes this accident is not as apt to occur when the knife or scissors are employed. After the hemorrhage is once established, the author claims that too much valuable time is lost in applying styptics when by simple digital compression at the site of the wound the bleeding can be promptly and effectively controlled. In only one of his cases was it necessary to continue the compression longer than an hour. The others ceased promptly in from 10 to 40 minutes.

Perugia[41] reports a well developed case of carcinoma of the velum palati which disappeared under the action of radium. The mucous membrane recovered its normal appearance. According to Perugia the rays of radium act first on the cells of connective tissue and secondarily on the parenchymatous cells. On account of this special property the total disappearance of the carcinomatous cells is supposed to be effected.

There is still considerable difference of opinion as to whether a general anesthetic should be employed in the removal of tonsils and adenoids. In the majority of continental clinics no anesthetic is employed while in some, the bromide of ethyl is used. Ethyl chloride has recently been strongly advocated by Neumborn[42] and Large[43]. Murry[44] regards ethyl chloride as one of the best means of procuring anesthesia of from five to fifteen minutes in children of all ages. There are no bad effects. Very few deaths have occurred in children and none in infants. The chief danger lies in over stimulation of the respiratory centres.

Stovaine as a local anesthetic in nose and throat operations has been employed by Coakley[45]. He sums up his experiences as follows:

1. That stovaine as a local anesthetic is apparently equal to cocaine.

2. That the time necessary for acquiring local anesthesia is that of cocaine.

3. That it apparently does not contract the nasal mucous membrane to so great an extent as do similar solutions of cocaine. This is at times a disadvantage, when the nasal passages are desired to be opened for more thorough inspection of the cavities; on the other hand, it is often times an advantage, as in snaring off redundant tissue, by not too greatly shrinking it, and therefore, making it more easy to remove.

4. Stovaine does not produce nearly so great a constriction in the pharynx as that which is produced by cocaine. In this respect it has a decided advantage over cocaine, especially in those patients to whom the symptoms of constriction with constant desire to hawk and remove a supposed foreign body are distressing.

6. Some of the patients have complained that solutions of stovaine are more bitter than similar solutions of cocaine.

7. We have seen no toxic effects following the use of stovaine; there have been no secondary headaches or feeling of lassitude after the local anesthetic effect of the drug has disappeared. I am also of the opinion that the secondary swelling of the mucous membrane following the use of stovaine, is less than that which occurs when cocaine is employed.

8. It is but fair to say that during this period when cocaine was employed there was no case of marked cocainism. For the sake of comparison in all cases where there were two operations done on the same person, stovaine was used on the one side and cocaine solutions of the same strength were employed on the other. Careful questions were asked of each patient to determine which was the better anesthetic and which gave the least disagreeable symptoms.

The throat complications of typhoid fever are reviewed by Quinlan[46]. He believes that in the treatment of these conditions tracheotomy offers many advantages over intubation in that the air current can be tapped by the former operation below the obstruction and the danger of forcing fragments of cartilage into the trachea is overcome. Again, the tube may rupture an abscess and flood the respiratory tract with pus which may provoke a septic pneumonia. He believes also that laryngitis occurring during the course of typhoid fever must always modify our prognosis. A continued hoarseness with slight dyspnea should at once demand an inspection of the larynx and trachea. A faulty movement of the laryngeal muscles should require internal and local medication. Marked dyspnea should at once call for operative surgical interference.

Among the premonitory symptoms of laryngeal tuberculosis as given by Skillern[47] are a peculiar sticking sensation below the region of the larynx, sensations of oppression or swollen throat, scratching and burning, sometimes actual pain. The cough is not so violent as that from the lungs. There is intermittent and recurrent dyspnea, Huskiness and vocal inequalities. Lancinating pains shooting to one or both ears are suggestive symptoms. Among the premonitory findings are: 1. Diffuse hyperaemia of the entire larynx. 2. Anaemia which may be limited to the ventricular bands or mucous membrane covering the arytenoids. 3. Untoward conspicuity of superficial blood vessels of the mucosa. 4. Apparently healthy larynx bathed in a gray, ropy, transparent secretion. The treatment of laryngeal tuberculosis by means of direct sunlight has received considerable attention. Kunwold[48] and Jessen[49] report good success. According to the former the infiltrations were influenced most by the sun's rays

though ulcerations were healed after repeated exposures. In cases with oedema Kunwold believes the rays are contraindicated, whereas Jessen found the sun's rays action beneficial but the exposures should be of short duration.

Dempel[50] believes phenosalyl to be a very valuable remedy in laryngeal tuberculosis. Stern[51] believes formalin to be one of the best means possible for treating tuberculosis of the larynx. Laryngotomy in tuberculosis of the larynx is discussed by Hansberg[52]. He calls attention to the work of Blumenfeld who was able to gather only 54 cases from the literature. The results in these cases were by no means discouraging as a complete cure was obtained in 15 or 28 per cent. of all the cases operated on while there was a marked improvement in twelve others. In nine there was no improvement. Hansberg operated on three cases with a complete cure in all. He lays great stress on the selection of cases. Only those cases should be selected in which the general condition is comparatively good, with little or no lung involvement. The process in the larynx must not show a tendency to rapid spreading. Hansberg does the operation in two steps. The tracheotomy is done under cocaine anesthesia and an interval of eight days is allowed to elapse in order to accustom the patient to the changed conditions. The larynx is then cocainized from the tracheotomy wound and after a division of the cartilage, the diseased tissue is removed. The fact that this operation can be done under a local anesthetic greatly modifies the prognosis. Barth[53] believes that even in severe cases of tubercular laryngitis good results may be obtained by the radical removal of all the diseased portions, even to the extent of a total extirpation of the larynx.

Can tuberculosis of the larynx be looked upon as an indication for the artificial interruption of pregnancy.

Kuttern's[54] observations of 100 cases have lead to the following conclusions:

1. Tuberculosis of the larynx, beginning during pregnancy, is not of frequent occurrence.

2. Pregnancy does not often occur when there is a tuberculosis of the larynx.

3. Primipara are as often affected as multipara.

4. The occurrence of a diffuse tuberculosis of the larynx during pregnancy gives a bad prognosis for both mother and child. Of the 100 cases only seven of the mothers lived, while of the seventy children forty-two died soon after birth.

5. A circumscript tuberculosis of the larynx gives a good prognosis. (Of the four cases reported all withstood the pregnancy).

6. These cases should be treated both locally and generally, but as a rule very little can be accomplished.

7. Tracheotomy is always to be made in case of severe dyspnea. At time of delivery preparation should always be made to do a tracheotomy if the occasion should arise.

8. The unfavorable prognosis which laryngeal tuberculosis gives during pregnancy for both mother and child is sufficient reason for interrupting the pregnancy.

9. The production of an abortion during the first half of pregnancy in selected cases *has* given good results, while during the last half only poor results have been obtained.

Considerable advance in both bronchoscopy and esophagoscopy has been made. A number of new instruments have been devised by Killian[55] Ingalls[56] and Jackson[57] which overcome many obstacles in both examination and treatment. The report of foreign bodies removed from the bronchi by means of upper bronchoscopy are no longer rarities. The book written by Starck on esophagoscopy which appeared last summer will no doubt dispel the prejudice which has always existed against the direct method of examining the esophagus.

Local anesthesia of the external auditory canal and middle ear by hypodermic injection of solution of cocaine and adrenaline have been reported by Von Eichen[58] and Laval.[59] The latter employs a half of one per cent. solution of cocaine in the shape of the Braun cocaine suprarenin tablet, dissolved in one ccm. of distilled water. He anesthetizes the sensory nerves, (a branch of the auriculo-temporal, a branch of the vagus and a branch of the auricularis magnus) before their distribution. In locating the nerves there is danger of injuring the temporal artery, auriculo-temporal nerve, capsule of the temporamaxillary joint and parotid gland. If the mouth be opened wide, the first named two organs sink, the capsule of the joint is stretched and the parotid gland is pushed forward. The needle is inserted 1½ cm. deep, 1½ cm. in front of the tragus and on a level with the floor of the auditory canal. Then pull ear gently forward and insert the needle to a depth of 1 cm. on a level with the canal and just behind the fold of the ear between the bone and the cartilage. One-half ccm. of the one per cent. solution is all that is required. The anesthesia begins in five minutes and lasts about twenty minutes. The method was used successfully in operations for furunculosis, ossiculectomies and for performing paracentesis. Schild[60] describes a new method of ethyl chloride anesthesia in aural surgery. He has a new metal container with a nozzle two inches long. He begins with a very small spray and gradually increases the volume until a feeling of coolness is felt in the ear. The evaporation is facilitated by a jet of air from a Politzer bag.

He uses this anesthesia in furunculosis, in performing paracentesis and in extracting polypi; also as a preliminary to the application of Lucae's pressure probe.

Bryant[61] has described a new method of making quantitive tests of the hearing. He has invented a phonographic accumeter. This instrument consists of a phonograph so constructed that the amount of sound reaching the patient can be accurately gauged and at the same time be under control. Bryant believes it provides a standard for the comparison of tests equal to those used by the ophthalmologists.

The radical treatment of acute otitis media is outlined by Dubar[62]. He divides the subject into media otitis of the new born in children and in adults. The difficulty of diagnosing the trouble in very young children is pointed out, the diagnosis often not being made until pus is seen in the canal. The infection coming through the eustachian tube, he advises the antiseptic cleansing of the mouth and naso pharynx at first signs of sickness, syringing morning and evening, a few drops of the following mixture into each nostril: Sterilized olive oil, 60 grammes; resorcin, 2 grammes. The child should be laid flat on a table and held by any assistant. He advises also placing in each ear morning and evening a pledget of absorbent cotton soaked in the following mixture, previously warmed: Glycerine, 40 grammes; resorcin, 1 gramme; acid phenique, 0.25 centigrammes. This practice being without danger should be persisted in during the entire acute stage of the disease. In the case of children the same technique and principles are followed, varying the proportion of the antiseptics to suit the age of the child and the cause of the otitis. In the case of adults he introduces into each nostril, morning and evening a piece as large as a pea of the following pomade: Vaseline, 20; lanoline, 10; anitol, 1; menthol, 0.30; stovaine, 0.20; and the patient is told to blow his nose slightly. The following mixture, luke warm, is recommended in 5 to 10 drop doses, to be dropped into the affected ear: Glycerine, 40; resorcin, acid phenique aa qr. 1. The indication for paracentesis are continuous and increasing pain, deafness, fever, evidence of brain involvement and bad general condition. He is an advocate of the dry treatment.

The treatment of vertigo and deafness by Babinski's lumbar puncture method has been tested by Tretop[63]. The functional results have been encouraging. The vertigo was regularly influenced, generally completely disappearing, the tinnitus following a similar course. He obtained without any doubt unexpected results in three cases in a considerable improvement in the hearing. Tretop thinks otology about to be enriched with a new procedure, which in certain definite cases may cause vertigo and tinitus to disappear and sometimes to even

improve deafness materially. Lombard and Caboche[64] have had no absolute cures with this method, but an amelioration of vertiginous symptoms. In one case headache followed which had not disappeared two and one-half months after the operation.

The application of collodion to the membrane timpani is advised by Bryant[65] in relaxed posterior upper segment and laxity of the malleal ligaments, especially with the malleo-incudo-tympanic. The collodion is painted on the drum head, the area to be covered depending upon the conditions. If the ligaments are relaxed the whole upper half of the drum should be coated. When the relaxed area is confined to the upper segment, the collodion should be applied only to this region. The amount of collodion should be carefully gauged. Seriously inconveniencing the patient or causing any damage to the drum head should be avoided. This form of treatment offers an encouraging prognosis.

Haike[66] examined five cases of tuberculosis of the ear in infants. In two of the cases the possibility of the sputum having passed up the eustachian tube and infected the ear could not be excluded, but in the other cases there was a primary involvement of the ear, the tube itself being the seat of the disease. Hennici[67] concludes from the findings in 19 mastoid operations in children, from two months to seven years of age, that 1. Tuberculosis is a relatively frequent disease in childhood, about one-fifth of all cases of mastoiditis being tuberculous. 2. Tuberculosis of the mastoid, in childhood is in the majority of cases, a primary tubercular osteitis, that is, the infection is caused by the blood. 3. A primary tubercular mastoiditis is more frequent than a secondary one following a tuberculous middle ear. 4. Tuberculosis of the mastoid in childhood is more often a purely local and benign affection. 5. Usually all of the diseased tissue can be removed by a simple operation. In only a few cases will the radical mastoid operation be necessary. 6. A positive diagnosis of tuberculosis of the mastoid can rarely be made by the macroscopic appearance at the time of the operation. The microscope will have to decide in the great majority of cases. 7. Facial paralysis is a comparatively rare complication in tuberculosis in children. When present it shows an extensive involvement. 8. Tuberculosis of the pharyngeal tonsil bears no special relation to tuberculosis of the mastoid.

Choice of selection in mastoid operations is discussed by Kuyke[68]. He has divided the cases into the following groups:

Group 1. Features obtaining in mastoiditis as a complication or a sequel of exanthemata.

Group 2. Features obtaining in mastoiditis as a complication or sequel of influenza.

Group 3. Features obtaining in mastoiditis as occurring in the course of chronic suppurative otitis media.

Delay in operation in first two groups should not be permitted beyond from 36 to 48 hours, if profuse discharge from the middle ear by incision or rupture with ice to the mastoid and general antiphlogistic measures do not markedly improve the condition. Cases showing infection with streptococci while at times lie in abeyance should not be treated tentatively on appearance of pronounced symptoms of aggravated pain about the ear, fresh rise of temperature, lessened or suppressed discharge.

Operation in cases of slow, painful recovery. Cases of chronic otitis media with constant otorrhea, neuralgic pains over the part, lowered general health with nervous irritability, perhaps vertigo, should be operated.

A case of otitic epilepsy is reported by Randall[69]. The patient was a boy of eight years who had received a drenching with a hose with a penetration of the water into the left ear in August, 1904, followed by acute inflammation. As the discharge slackened epileptiform attacks, sometimes four or five a day began about September 1st. These attacks occurred almost daily with spells of unconsciousness lasting about 60 seconds. September 22 he was operated on; tympanic exenteration was done. The epileptiform attacks continued till December 1st, when a complete exenteration of the mastoid was done. The sinus was laid bare and the tegmen removed from the middle ear and the antrum with negative findings. Following the second operation the attacks steadily diminished in severity and on April 14 had disappeared entirely.

According to Hinsberg[70] a diffuse purulent meningitis is no longer a contra indication for operative interference. He believes that an exploratory opening when carefully done does not endanger the life of the patient.

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DERMATOLOGY AND SYPHILIS.

IN CHARGE OF

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There is no disease of the skin about which there is so much confusion, speaking in the broadest sense, as there is about that of eczema. It is of course the most frequent of all diseases of the skin; there is no doubt that there is included in the present term of eczema many entities deserving separation from the present group. Many years ago the writer attempted to divide the eczemas into etiological groups. Since then years of experience have taught him his earlier error and, speaking from an etiological standpoint, he is at present as much at sea as to the causes of eczema as he was then certain of his knowledge of that part of the subject.

Arthur J. Hall[1] has attempted an "Inquiry into the Etiology of Infantile Eczema." He has studied 60 cases in the most critical manner and the conclusions at which he arrives are somewhat startling and contradictory to our present knowledge of this form of the disease. He gives in this article a history of infantile eczema and quotes the opinion of various authorities as to its cause, and exposes these presumptive etiological factors to a critical, clinical examination during the course of his 60 cases. We may summarize the conclusions of this valuable article as follows: (a) Sex: of the 60 cases 47 were males, 13 females. (b) Age of mother: below 25 years, 16 cases, above 25 years but 29 cases. (c) Number and relative age of other children: in over 50 per cent. of the cases the affected child was either a second or third born, in only 14 per cent. it was the first-born, leaving 86 per cent. in which the child was other than first-born. This shows that as a rule eczematous infants are not the children of very large families. This point is of importance as very frequent childbearing not only tends to exhaust the mother and thus affects the milk supply but also to increase her domestic duties and hence to neglect the care of the children. (d) Evidence of skin disease in the mothers: in 13 per cent. there was a definite outbreak of eczema. In 31.5 per cent. there was evidence of seborrhoea, in 11 per cent. vague history of skin disease, in 44.5 per cent. no past or present skin disease. (e) Evidence of skin disease past or present in other children: there was no skin disease at all in 90 per cent. of the cases and this fact seems to point to the non-infectiousness of the form of eczema under consideration. (f)

Age of children when eruption first appeared: one to four months, 78.3 per cent., five to twelve months, 21 per cent. (g) Situation of first appearance of eruption: the eruption first appeared on the cheeks, forehead and temples in 32 cases, on the scalp or behind the ears in 25 cases, elsewhere in 3 cases. The large percentage of cases in which the eruption first appeared on the face and head is a very striking feature. (h) Time of year in which the eruption first appeared: The largest number of cases in any single month is in January, next largest in October, whereas no cases occurred in June. There seems to be a very definite drop in the number of cases during the warmer months and a corresponding increase during the colder months. The writer calls particular attention to the fact that those months in which all kinds of gastro-enteric affections are particularly prevalent in infants are the very months in which the smallest percentage of cases occurred. This is very important in the supposed relationship between digestive disturbances and infantile eczema. (i) Nature of food at the time the rash first appeared: breast-fed only, 33 cases; breast and other things, 18 cases; bottle-fed entirely 8 cases. As regards the food other than the breast in the 18 cases, there were patent foods in 2 cases, crusts in 4, rusk or biscuit in 7, sago in 1 case, uncertain in 4 cases. (j) The relationship of vaccination to infantile eczema: cases in which the rash preceded vaccination, 46; cases in which vaccination preceded the rash 14. (k) Evidence as to dentition: dentition preceded the rash in 7 cases, rash preceded first dentition in 49 cases. The author says under this head that we may eliminate dentition as an etiologic factor in infantile eczema and feel quite clear that when the two coincide it is a simple chance as regards their relationship. (l) Evidence of gastro-intestinal disturbances: investigation was made on this point in 52 cases There was evidence of malnutrition in 8, none whatever in 44. There was evident rickets in 8, no rickets in 28, doubtful in 15. There was vomiting in 4, absence of vomiting in 49. There was diarrhoea in 10 cases, absent in 45. His 60 cases showed a quite remarkable exemption from gastro-intestinal trouble. (m) Character and distribution of the eruption: The eruption varied according to the duration, cleanliness and amount of secondary infection, etc. The distribution was frequently extensive and the symmetry of the eruption was marked.

It can be readily gleaned from the resume of this extensive work that the principal points brought out are the evident relationship between cold and exposure in the etiology of these cases; that gastro-intestinal disturbances certainly do not play the part usually considered; and as other members of the family had no evident skin disease, that

infantile eczema is not, in its incipiency at any rate, of an infectious character.

Henry W. Stelwagon[2] discussed before the International Dermatological Congress "Some Observations Concerning Palmar Eruptions." He speaks particularly of the chronic dry scaly fissured eczema and syphilis of the palmar aspects of the hands in which the eruption seems wholly independent of recognizable agencies. They are rarely seen under 25, and seldom under 30 years of age There are frequently cardiac or renal symptoms associated with anemia and the patients usually lead a sedentary life. He points out the difficulty of a differential diagnosis between eczema and the scaly conditions of the palmar surfaces. If the condition is syphilitic the author recommends hypodermic injections of mercury in large doses as a local remedy A mild mercurial course often proves useless.

Psoriasis. A. Camper[3] brings forward a new organism which he finds in the scales of psoriasis. Scrapings of the epidermis after the removal of the superficial scales were placed in 1—1000 formalin and distilled water, then placed in salicylic albumin, then in absolute alcohol for twenty minutes after which they were stained with borated methyl blue, washed in plain water cleared and mounted. Sections of the skin were similarly treated. In these sections so treated were found round, but commonly oval bodies measuring ½ to 1 mm. situated on the epithelial cells. The body was sometimes double and contained one or more nuclei. These bodies are not found in other forms of skin disease and are similar to Donovan-Leischman bodies.

Dermographia. Stursberg[4] examined 90 men, 84 women and 70 children in regard to the response of their skin to a line drawn with moderate pressure and moderately quickly along the skin with the rounded end of a pencil holder. A stroke was made on the skin of the chest and the upper part of the back and the interval before redness appeared and before it disappeared was noted. The skin became red in nearly every instance. The redness was slightly more pronounced in patients with neuroses than in others, but the average was surpassed in some of the patients who were free from neurotic manifestations. Stursberg concludes, therefore, that dermographia has no appreciable diagnostic significance.

A rather curious instance is reported by Ward[5] of a woman of 47 upon whom, while working in the garden under the sunlight there appeared on both arms and the back of the neck markedly elevated patches and streaks with severe itching and burning. Similar eruptions appeared whenever she was exposed to the sun's rays, appearing on those portions of the body most exposed. The eruption would disappear a short time after coming from under this influence but

would reappear upon similar exposure. The x-rays did not produce these results. Dr. Ward remarks that heat alone does not seem to be responsible for this eruption for the patient can sit before a fire without disturbance.

Pemphigus. The etiology of true pemphigus is unknown and any light that may be thrown upon it through the detailed study of a case is always of value. Since we consider pemphigus an eruption consisting of bullae without an areola, we have a rather rare entity. Pellagette's[6] case seems to answer this description. The man died and was conscious until an hour before death. Post mortem findings were as follows: Spinal cord, heart, pancreas, suprarenal capsules and lymphatic glands were normal, the brain, spleen and stomach congested. There was congestion in the lungs and hemorrhages in the visceral pleura. The renal pyramids were congested and the cortex swollen and granular. The medulla of the femur was abnormally hard and reddish-grey. The title of this work is, "The Alterations in the Bone Marrow in Pemphigus," and from study of this marrow the author found that of the white cells 75 per cent consisted of large mononuclear cells with a homogenous protoplasm and the nucleus poor in chromatin, without granules in basophile groundwork. Twelve per cent. of the cells were eosinophiles, 7 per cent. small lymphocytes. Altogether the polynuclear cells did not exceed 5 per cent. The changes were most marked in the periphery of the medulla.

Opsonins. The staphylococcus albus is an important agent in the symptomatology of all skin diseases. It is an organism possibly manufacturing toxins with various chemical affinities and action. As skin diseases are more or less exposed to infection by this organism its pathological action must always be considered and through the various chemical affinities that its toxins may exert, the symptoms of these diseases often depend upon its action. G. T. Weston[7] has performed some rather interesting experiments on "The Influence of Potassium Iodide on the Resintance af Blood Fluids to Staphylococcus Albus." The frequent appearance in iodism of a pustular eruption was the basis of his experiments. He wished to see if iodine had any influence over the serum in reducing its power over bacteria. Along the idea of opsonins as pointed out by Hektoen[8] and Ruediger,[9] the opsonic index has been shown to be a constant factor in health, except that in women it is markedly lowered during menstruation. In disease, however, very remarkable variations have been shown to occur. The author worked to answer the following questions: (a) Does the administration of potassium iodide produce a fall in the opsonic index to staphylococcus? (b) Has a person suffering

from a pustular iodide eruption an abnormally low opsonic index? (c) Does a person's opsonic index rise when the drug is stopped? Experiments were carried out in a very careful and scientific manner and proved to the author conclusively that the administration of potassium iolide has no influence on the opsonic index of the serum and, therefore, that iodine is not necessarily associated with a low opsonic index.

Lichen Spinulosus. Under the name of lichen spinulosus there is an affection of the skin well known in England which occurs in children and is characterized by the appearance of fine filiform spines arranged in groups and distributed more or less symmetrically over the trunk and limbs. The spines arise from the sebaceous follicles, the mouths of which are slightly raised forming spine-like papillations, the skin slightly red. It is accompanied by itching. There is no disturbance of the general health.

Adamson[10] has made a very exhaustive study of this disease, also Felix Lewendowsky[11]. The two authors differ in their histological findings The former says that the pathological process is essentially a hyperkeratosis of the follicle and that perifollicular inflammation is absent or little marked, while the latter considers the eruption an inflammatory affection of the follicles and that the spines are of secondary formation. Adamson believes that there is some etiological connection between lichen spinulosus and lichen planus in the adult while in children there seems to be no such connection. He furthermore considers that the acne cornea of Hardy and Guibot is the same disorder. Thus several distinct conditions are brought under one head, which is always a great stride in the progress of any branch of medicine.

Dermatitis Coccidicides. At the present date the field of protozoic diseases seems to be enlarging rapidly and any information on protozoic and coccidiform parasites is of great value. S. B. Walbach[12] has contributed a study "Upon the Life Cycle of the Organism of Dermatitis Coccidicides." The organism was obtained from a case of Dr. W. P. Bowles, the patient having probably contracted his disease in California where the other cases have come from. From the tissue removed at operation cultures were obtained which seemed identical in their resemblance to young colonies of oidium lactis upon glycerine agar. Microscopically these cultures were composed of a radiating mass of coarse, branching, occasionally segmented amicilia with a distinct membrane. Very old colonies contained spherical bodies resembling those in the tissues although no budding was shown. In guinea pigs and rabbits lesions were produced very similar to those of tuberculosis in which were found

spherical bodies undergoing endogenous reproduction. Segmentation of the spheres with the finely granular protoplasm commenced by peripheral division of the protoplasm which, extending inwards, results in a mass of polyhedral segments separated from one another by clear spaces. These segments finally became spherical or oval and were liberated by the breaking of the capsule. The writer says that the organism cannot be a blastomyces, though most closely resembling the oidium type, is excluded by the absence of budding

Ophuls[13] adds three new cases to the ten of dermatitis coccidicides with a resume or synopsis of all the cases to date. He speaks of the organism as a fungus and cites the facts as above given by Walbach. It is very probable from the observation of many authors that the dermal symptoms of this disease are secondary to the visceral involvement. This may possibly be true also in blastomycitic dermatitis.

On the other hand, Claude A. Smith[14] has proven conclusively that uncinariasis enters the system through the skin. He showed experimentally that the four-days'-old larvae of the uncinaria Americana when mixed with soil and applied to the skin produced a local dermatitis, the so-called ground itch, and that after several weeks the eggs of these organisms were found in the stools. The eruption produced by the experimental application of these larvae with dirt was in the form of a dermatitis with vesiculation and quite a marked degree of swelling without particular tenderness. Five or six days after inoculation the swelling began to subside and was practically well upon the ninth day. The experiments of Dr. Smith are important in differentiating this condition upon the feet and extremities of those who inhabit the districts where this organism is prevalent.

Fordyce's Disease. This interesting condition has been studied by C. J. White[15] both clinically and histologically. The histological findings in Dr. White's cases do not agree with recent writers upon this subject. The essential changes seem to lie in the epidermis and consist of acanthosis, edema, and parakeratosis, conditions originally found by Fordyce, the first investigator of the disease. Clinically White's cases had a persistent dyspepsia and a concommitant seborrhoeic condition which would tend to confirm the pathological finding of those writers who call the disease acne rosacea of the mucous membranes. Pathologically, however, the sections contradict this view absolutely as the sebaceous glands present lie beyond the bounraries of the lesions proper. In this connection it may be well to remark that Warren Allen[16] highly recommends the high frequency spark for this condition of the lips. He says that two or three sittings usually suffice and that the pain is slight. He uses a contact spark of

about ⅛ of an inch, or one which causes almost at once a marked whitening of the surrounding pink of the lip.

Acrodermatitis. Carl Herxheimer[17] again brings forward his "Acrodermatitis Atrophicans Chronica" as a distinct entity and not to be confused with or considered as identical with scleroderma. Confusion can only exist in the atrophic stage as in the inflammatory stage the diagnosis offers no difficulty . Scleroderma may begin with hypertrophy, yet it is very different from that of acrodermatitis. Sclerodermic skin is hard while acrodermic skin is soft and loose over the tissues. Scleroderma may affect any part of the tissues but acrodermatitis cannot as it begins on the extensor side of the extremities and ascends. There is always a fresher, more acutely inflammatory look about acrodermatitis than in any stage of scleroderma.

Exanthemata. Hecktoen[18] reviews the work done on "Experimental Measles," and cites two experiments done by himself. The blood of a patient in the fourth day of measles was withdrawn from a vein, injected into ascitis broth and placed in an incubator twenty-four hours. From a flask of 50 c. c. inoculated with 3 c. c. of blood and kept in an incubator twenty-four hours and which had remained sterile, there was injected under the skin of a healthy man 4 c. c. of this fluid. This man had had no disease resembling measles. There was no local reaction. On the thirteenth day the temperature rose to 101° and on the fourteenth day a red, papular eruption appeared. The disease ran an uneventful course toward recovery with the usual desquamation. There were no respiratory symptoms or catarrh. In the second case the blood was withdrawn from a patient with the disease thirty hours old and injected into broth in a similar manner as above and thereafter injected into the back of a man. This second case had catarrhal symptoms with eruption and presented more of the typical symptoms of measles than the first. From these experiments Hektoen concludes that the virus of measles is in the blood of the patients and that it retains its virulence for at least twenty-four hours under the conditions above enumerated.

Variola. W. T. Howard, Jr., and R. G. Perkins[19] conclude from the vaccination of the cornea of the rabbit that the primary cytoplasmic stage of the organism occurs as in that described by Tyzzer, and that in human vaccinia the epidermic changes correspond to the vesicular change of variola, and that the changes in the cornea are far more intense. The secondary changes of the organism, as described by Councilman, do not occur in human vaccinia; they grant, however, that the group of cytoplasmic and nuclear bodies, described by Councilman and others, are parasites causing these diseases. It seems that the lower animals inhibit their sexual

cycle, but admit that there are sexual cycles, which give rise to an immunity in man from both cycles.

James Ewing[20] in "The Study of the Structure of Vaccine Bodies in Isolated Cells", as described by various authors as being a form of parasite, has used the Klatsch preparations, which have seemed to prove a method of great value. He says that some doubt must remain as to the nature of these bodies as a specific form of degeneration is a frequent feature of infectious processes. Ewing has been unable to find any agent which produces the specific changes as seen in vaccinia and variola, therefore his minute studies, although throwing much light upon the structure of these bodies, does not prove their true nature.

W. E. de Korte[21] studied the contents of a smallpox vesicle in hanging-drop preparations. Ho concludes from these observations and culture experiments, that the peculiar bodies seen are protozoa, and says, that they can be grown in pure culture on a suitable medium.

R. L. Thompson,[22] has contributed a very rapid and unique method of differential diagnosis in smallpox. Relying upon the specific changes seen in the epidermis as being characteristic of vaccinia and variola, he snips off the top of the vesicle and submits it to a rapid method of paraffine imbedding, as described by Henke and Zeller, and, after cutting and mounting in a special manner the sections are stained for examination. By this method a laboratory or histological examination of a suspected piece of skin can be made in three hours This method is well worth studying and should be added to the technic of those who are called upon to make rapid diagnosis of obscure eruptions suspected of being smallpox.

Tuberculosis. H. G. Anthony[23] reports a peculiar case of "Follicles of the Skin and Conjunctiva." Such an involvement of the eye is exceedingly rare, although one can see from the pathology of the affection that the eye cells and other organs of the body may be thus involved in tuberculous processes.

Arthur Witfield[24] contends in an article upon "A Further contribution to our knowledge of Erythema Induratum" that there is a form of disease indistinguishable from Bazin's disease, by ordinary clinical methods, not tuberculous in nature, and calls attention to the value of treatment by sterilized tuberculin, thus echoing in the latter respect the opinion of Sir T. McCall-Anderson,[25], who in "A Plea for the more General use of Tuberculin by the Profession," emphasizes the great value that can be obtained by the use of this remedy in tuberculous affections of the skin. He says, "like most every powerful remedy it is useless, or even hurtful, if not administered with the requisite knowledge and skill." Having employed it continually,

since its discovery, he has come to know the remedy pretty well, and says, that in many cases in which he has used it, the manifestations of the disease have entirely disappeared. He also places great value upon it in the differential diagnosis of tuberculous diseases.

Leprosy. I. Dyer,[26] who is an earnest worker in this field, takes a very rational view upon the subject of "The Cure of Leprosy." He has worked for years in New Orleans, and has virtually had charge of the lazarette. He believes that crude chaulmoogra oil is more a specific for leprosy than any other remedy; but a careful diet, hygiene and baths together with tonics should also be used. T. Bey,[27] gives the chaulmoogra oil by subcutaneous injections in doses of five grams. In using the injections he has not seen pulmonary embolism, or any other symptom sufficient to cause him to abolish the method. Aseptic care, however, must be taken, and the injection should not be made near a very large vessel.

The most interesting treatment of leprosy mentioned is that introduced by H. B. Wilkinson[28] of the United States navy, who in an address delivered before the Manilla Medicel Society, in October last, spoke upon "Some Observations on Leprosy in the Philippine Islands, with an Account of its Treatment with the X-Ray." He reports some marvelous results as occurring under this method of treatment, and is inclined to believe that the cure takes place by the lepro-bacilli in the lesions being killed, and their bodies absorbed by the system, thereby producing an immunity against the living organism. In support of his theory he states, first: The treatment of one leprous spot on a patient produces improvement in spots at a distance from the one actually treated. Second: The cure in the distant spots seem to progress parallel to, and be just as complete as that in the one treated. Third: The best results seem to be obtained only when treatment is pushed to the point of killing, or beginning to kill, the tissues, which would also probably be to the point of killing the organism. The best results are obtained where there is a mass of leprous tissue for exposure.

Therapy. The therapeutic use of the x-ray during the previous year has not been extended. McMaster[29] and others report beneficial results in the treatment of sarcoma, and W. A. Pusey[30] after three years' use of the x-rays occupies virtually the same position that he formerly did.

C. W. Allen[31] speaks favorably of the high-frequency spark in Fordyce's disease of the lips.

Kreibich[32] believes that certain skin affections are sympathetic reflex phenomena. He therefore entitles an article "The Cause and Treatment of Cutaneous Affections," in which he tries to trace, under

this theory, the sensory stimuli which cause the pathologic reaction in the form of disease. Under this class he names gangrene, urticaria, prurigo, decubitus, etc. To treat these affections the source of the disease must be attacked and the reflex excitability reduced. He places great stress upon arsenic in the form of Fowler's solution and peppermint water, equal parts, and uses it in gradually increasing doses.

Malcolm Morris[33] remarks that the general principles of the treatment of skin diseases may be expressed in the single word *reaction*, and without reaction there is no cure. He means by reaction a produced inflammation of various degrees, therefore his methods of treatment are directed to the production of this effect. Reaction may be produced by local measures, which upon general principles is better; and by the use of various internal agents.

G. McGowan[34] contributes a splendid article upon "The Use of Adrenalin Chloride in Hemorrhages and Angio-Neurotic Diseases of the Skin." He has obtained brilliant results from the use of this agent in ten drop doses in purpura, urticaria and erythema-multiforme.

The results of McGowan coincide with those of the writer of this review, who in 1903 published an account of the excellent results that may be obtained from suprarenal gland in various angio-neurotic diseases.

There is no disease with which the general practitioner, or the dermatologist has to deal that is more stubborn to relieve than that of pruritus ani. Ball[35] has introduced an operative procedure for the relief of this condition which seems to be of great value. The details of this operation it is unnecessary to give here yet in inveterate cases the unique method of Ball should be borne in mind.

Two very valuable formulas for psoriasis appeared during the year, that of Dreuw and Ashmead[36]. Dreuw's is as follows:

Acid salycillic, 2½ drams.
Chrysarobin, 5 drams.
Ol. rusci, 5 drams.
Sapo. virid., 6½ drams.
Vaseline, 6½ drams.

The ointment is applied by a stiff brush to the affected areas for from four to six days. After it is dry a little starch may be sprinkled over it. On the fifth or sixth day the patient starts taking hot baths daily, for from one to three days, and after the bath vaseline is well rubbed into the affected areas from one to three times a day. This course of treatment, which embraces a period of eight days may be repeated several times, according to the severity of the disease; but, as

a rule, psoriasis patches disappear soon after the first treatment.

Ashmead[37] has introduced a very valuable agent which is used in psoriasis of the nails, namely: "mesotan," which is rubbed into and under the nail several times a day. It has the additional advantage of not staining the skin.

Ringworm. The treatment of ringworm of the scalp by the use of the x-rays has almost substituted that of other methods[38], it however, must be used with exceeding care as dangerous results may follow.

Syphilis. R. W. Taylor[39], in discussing "The Prognosis of Syphilis," reminds us that we have two elements to contend with: namely, new cells and a diffusable poison, and that the benignity or severity of syphilis is determined by the condition of the patient. He believes that some enjoy possible immunity and offer such resistance to the poison that slight impression is made upon the tissues. Extragenital and genital infections do not differ materially in the result, and course of the disease. The greater changes to be dreaded are those in the blood vessels which menace the patient in the latter years of his life. Early efficient treatment is the best answer in the prognosis.

J. Nevins Hyde[40], in speaking of "Syhpilis as Related to the Problems of Longevity," says, the expectation of life upon acquisition of syphilis is based in part only upon the tendencies to the morbid process. Such expectation is in large measure affected by the inherited tendencies, the habits of life and the environment of the individual, and that they are better for women than for men by reason of the relative placidity of existence of the former.

Etiology. Almost every year a candidate in the form of some micro-organism is introduced as the probable cause of syphilis. The candidacy has heretofore been short lived. However, the latest, the spirochaeta pallida is winning so many loyal contributors that there has been a decided stir in the scientific world over this parasite.

T. Sherman, in the Scottish Medical and Surgical Journal, September, 1905: Journal Cutaneous Diseases, October, 1905, gives such a clear and concise review of the spirochaeta pallida in syphilis that we give it here almost in full.

The credit for the discovery lies with Schaudinn and Hoffman[41], whose first paper appeared in the *Arbeiten aus dem kaiserlichen Gesundheitsamte*. Later they gave fuller details in the *Deutsche med. Wochensch*[42], and *Berliner klin. Wochensch* ([43], , a, and b), and from these papers the following description is compounded: The authors draw attention to micro-organisms of the genus spirochaete, which they have found in primary and secondary syphilitic lesions, not only at their surface, but also in their deeper parts, and in the cor-

responding lymphatic glands. They saw them living—they remain alive for several hours in physiological salt solution—and also in smears from the tissue juice, fixed in absolute alcohol, and stained by a modification of Giemsa's method.

Schaudinn holds that spirochaetes are related rather to the protozoa than to the bacteria, and hence must be clearly distinguished from the spirilla.

He describes two varieties, one found only in syphilitic lesions, the other saprophytic in nature, and constantly met with in stagnant secretions, such as occur about the genitals.

The former, which he names spirochaete pallida, is extremely delicate, very weakly refractile, vigorously motile; stained with difficulty and seen with difficulty, by very high powers of the microscope—1-12 oil immersion objective, with medium to No. 8 ocular being required. It is long, very thin and filamentous, spiral or cork-screw shaped, with pointed ends. In length it varies from 4 to 10 u.; its breadth is difficult to gauge, being at most about 0.25u., the turns in the spiral number 6 to 14, averaging 8 to 10. They are not only numerous, but very narrow, regular, and deep. Some writers describe a nucleus, but this fact is not yet absolutely proved. It progresses by rotating on its long axis, and when at rest it shows undulatory movements in its whole length, suggestive of the play of a vibratile membrane.

The second he names *spirochaeta refringens.* It is larger, refractile, the turns of the spiral flatter, wider, and more wavy or undulating than cork-screw shaped. It stains well with Giemsa's agent.

In addition to the difference in refractile power and general configuration the spirochatea pallida (spirochaeta obermeireri, ansernia, Ziemanni, buccalis, refringens, etc.) differs in its extraordinary slight colorability with all stains that can be used for its detection. Moreover, the worker may have to spend at least an hour over a smear before a spirochaeta pallida rewards his patient search.

Method. Hard sores were excised, cut into from below, the fluid expressed, and smears made, or groin glands were punctured with a hypodermic syringe and the small amount of fluid so obtained was treated similarly. It is known that the fluid from these indolent glands is infective (v. Rinecker and Bumm[45]), hence it was hoped that its examination would disclose the cause of syphilis.

In their first paper[41] Schaudinn and Hoffman report that they found spirochaeta pallida in the surface lesions in 7 cases of uncomplicated primary and secondary syphilis, and in 4 out of 5 cases of syphilis with complications, in 3 of which it was associated with spirochaeta refringens.

In 8 cases of undoubted syphilis[42] the spirochaeta pallida was demonstrated in 6 smears from excised glands or in fluid obtained by puncture. In four cases complicated with gonorrhoea, papillomata, soft sore, and balanitis, in which, however, the glands had the characters of the syphilitic swelling, these contained spirochaeta pallida alone.

Schaudinn also found the spirochaetes in blood from the spleen obtained during life on the day previous to the appearance of the roseolar rash.

No spirochaetes were found in soft chancres, buboes, or in carcinomatous, sarcomatous, or lupus tissues.

After summing up their results these authors conclude that we are not far from finding the cause of the disease in this early form of life[43].

Results of Other Workers. Metchnikoff and Roux had already succeeded in infecting apes with syphilis[46], and now they found the spirochaeta pallida in small numbers in local lesions in four out of six infected monkeys[47]. They found them, moreover, in four out of six cases in man in recent scrapings of secondary papules, and also in one case of congenital syphilis. In control cases (psoriasis, scabies, acne, etc.), they failed to find spirochaeta pallida. They have not succeeded in cultivating the spirochaetes, and have small hopes of doing so. They conclude that the spirochaetes probably play an etiological role in syphilis.

In the discussion on Schaudinn and Hoffman's paper, Thesing suggested that the spirochaetes were developed in the stain. This was controverted by Wechselmann, Lowenthal, Schaudinn, and later by Giemsa[48], who suggested that what Thesing saw were crystals of methylene blue or methylene azure. This side issue is still being discussed[49]. Buschke and Fischer found the organisms in the tissues of a congenital syphilitic infant post mortem[50], and also in the blood of the same case taken during life[51]. Non-syphilitic children gave negative results. Frosch found spirochaeta pallida in the blood veins, Reckzeh found it in three syphilitics and failed to find it in two other non-syphilitic patients examined[44]a. Raubitschek detected the spirochaeta in the circulating blood of secondary syphilis[79]. Kraus[25] insists on the necessity of making a great number of preparations, the spirochaeta pallida being often very irregularly and unequally distributed. He has never found spirochaeta pallida in controls. R. Volk[77], on examining 31 syphilitic patients, found the parasite in great majority. The results were negative in 13 out of 14 syphilitic glands examined, and in 17 control non-syphilitic lesions. Levaditi[53] a, b, found spirochaeta pallida in fluid from the bullae of syphilitic pem-

phigus, and also in another congenital syphilitic infant, three months old, from the spleen, lungs, and, above all, the liver. Salmon[76] and Hoffman[54] confirmed these observations, and in addition the latter[54] reports that Schaudinn and he have found these spirochaetes in papular syphilides situated far away from the genitals, e. g., on the breast and back. Babes and Panca[55] report cases of congenital syphilis in which they found spirochaeta pallida. It was demonstrated in greatest numbers in the supra-renals. They believe that facts support the relationship of spirochaeta pallida to syphilis. E. Hoffman[56] has found spirochaetes somewhat similar to spirochaeta pallida in carcinomatous ulcers. He thinks that possibly some of these may be examples of bacillus fusiformis. C. Fraenkel[57] found the spirochaetes in six varied cases of syphilis and writes enthusiastically in support of Schaudinn and Hoffman, indeed going further then they do. He has no doubt whatever as to the etiological relationship of spirochaeta pallida to syphilis. R. Herxheimer and H. Hubner[58] examined 18 cases in two of which the diagnosis was between soft sore and syphilis. These gave negative results, and the subsequent course of the disease justified this finding. In 15 of the remaining 16 they found spirochaeta pallida, in one of these in sections of the tissues. This is so far unique. They failed to find them in syphilitic glands, in blood, or in the organs of congenital syphilitic children. Rille[64], Baudi and Simonelli[65], Ploeger[66], and Jensen[78] were all successful in finding the spirochaeta pallida in primary and secondary lesions and glands. Galli-Valerio and A. Lasueur[62] refer to the results of other investigators, and then give their own. They used Michaell's stain, Ziehl's fuchsin, and Romanowsky. They found the spirochates in specific condylomas and in mucous plaques in five out of six syphilitics. They failed to find them in a mucous plaque, a gland, and a hard chancre. In these cases the organisms may have been in very small numbers. They expressly note that Schaudinn and Hoffman do not claim that these organisms are specific. Wechselmann and Lowenthal[59] found very short spirilla 3 to 4 u. long, and ask whether the spirochaetes described by Schaudinn are not formed by the unison of several such micro-organisms. Vaillemin[60] claims that spirochaetes are related to algae. Spirochaeta pallida, on the contrary, is correctly attached to the protozoa by Schaudinn, and Vaillemin proposes the name of *spironema*. M'Weeney[61] found spirochaetes in 9 primary and 15(?) secondary cases of syphilis. His results were negative in a tertiary ulcer of the palate and in a non-ulcerating muco-purulent vaginitis. Jacquet and Sevin also failed to find spirochaetes in all tertiary lesions examined[67] (*cf. Spitzer*). Gordon[63] failed to detect spirochate in the fluid obtained by lumbar puncture in cerebro-spinal syphilis

and in tabes with a distinct syphilitic history. L. Spitzer[63] found spirochaeta pallida in six primary sores, in seven skin eruptions, in some cases even after long treatment. This is also the experience with others. He found them also in two cases of teritiary syphilis—in one case from distinctive infiltrations, and in the other from a gumma of the scalp. The latter case had had no treatment. No other observer has been sucessful in cases of tertiary syphilis. M'Weeney, Gordon, and others suggest that tertiary lesions are caused by a chronic intoxication, due to absorption of the metabolic products of the spirochaete. Spitzer's results were negative to eczema, pemphigus, psoriasis, verruca, plana, and erythema nodosum. All the authors referred to so far (the references are arranged to a certain extent in the order in which their papers appeared) support Schaudinn and Hoffman. A very few are critical or even hostile.

H. Horand[69]a refers to his published works of a *hemoprotiste* pathogenic agent of syphilis[69]b. The spirochaete described by Schaudinn appears to be identical with one of the involution forms of this hemoprotiste.

Paltauf[70], discussing the relationship of spirochaeta pallida to syphilis, emphasizes the fact (according to Schaudinn) that it is not of bacterial but of protozoal nature, and represents an involution form of a blood parasite. Still, whilst one recognized trypanosomes and Spirochaetes as blood parasites, one did not know that they produced a form of granulation tissue, such as found in syphilis. M. Schuller[71], in a review of Schaudinn and Hoffman's communication as to the occurrence of spirochaeta pallida in lymph glands[42], doubts whether it has a causative relationship to syphilis at all. He believes that he has seen these bodies years ago, but described them as bacilli (references to paper given), and he can not understand Schaudinn's reasons for placing them amongst the animal parasites. He suggests that they may be contaminating bacilli. He also criticises the technique employed. Most of his objections have been answered by numerous workers already referred to, the strongest argument against them being that the spirochaeta pallida has been found only in syphilitic lesions, and never, except by Kiolomenoglu (v. Postea), in many non-syphilitic conditions examined by similar methods.

The most important paper on the negative side is that of Kiolomenoglu and von Cube[72], just referred to. In the first place, they were able to confirm the absence of it in non-syphilitic lesions. In all their work they exercised the greatest care in making and staining their preparations. They found the organism in: (1) A collection of syphilitic cases. (2) In the secretion from an inflamed phimosis.

There may have been a masked primary lesion in this case. (3) In pus from a gonorrhoeal abscess of Bartholini's gland in a patient with leucoderma colli specificum. (4) In simple balanitis. (5) In pus from a scrofulo-dermatic abscess. (6) In the degenerative products of a suppurating cancer. (7) In tissue-juice of a condyloma acuminatum.

Negative results were obtained in acute gonorrhoea, syphilitic blood, acne vulgaris, impetigo, phthisical sputum, etc.

They do not hesitate to claim these bodies found in some non-specific cases as typical examples of spirochaeta pallida. Particularly characteristic was the preparation from the carcinoma. However, in all the above cases they found the spirochaeta refringens as well. But often they found—and to this they attach great weight—in one and the same field, in addition to the typical forms of the spirochaeta pallida and refringens, numerous atypical spirochaete forms whose character corresponded to neither of these. Some of them were not so long as spirochaeta pallida, and two to three flat wavy curves (*cf. Wechselmann and Lowenthal*), whilst in all other respects they were like spirochaeta pallida. Others stood midway between the two, and it was impossible to correlate them with either.

There seems to be quite a spirochaeta fauna, especially frequent in stagnant secretions, so that they could not resist the conclusion that spirochaeta refringens and the above-mentioned atypical forms are manifestly saprophytes. It must be remembered, however, that they have found spirochaeta pallida as well in such secretions, and the idea that it also may be saprophytic is not at all, as yet, to be on one side. They think that C. Fraenkel's conclusion that the spirochaeta pallida is undoubtedly the cause of syphilis has been spoken rather too soon. "We are at least not yet in the position to determine the characteristics distinguishing spirochaetes occurring in syphilis from those occurring in other conditions."

One may say, in criticism, that granting all this, it does not necessarily exclude the possibility—judging from the many important, positive observations made—that the spirochaeta pallida may be the veritable cause of syphilis. It is a commonplace in bacteriology that many of the most important pathogenetic organisms may occur in or on the body as saprophytes, the condition being unfavorable to the exercise of their pathogenic powers.

Summary. Metchnikoff and Roux have proved that syphilis is transmissible to the anthropoid apes. Later Schaudinn and Hoffman described extremely delicate spirochaete forms in primary and secondary syphilitic lesions, and peculiar to syphilis. They were dis-

covered in hanging drops or making smears, and after fixation in alcohol, staining by a modification of Giemsa's method.

Metchnikoff and Roux found identical forms in the experimental lesions in monkeys. A considerable number of workers confirm completely the work of Schaudinn and Hoffmann. In addition, the spirochaeta has been found in the blood and organs of congenital syphilitic infants, and in acquired syphilis in blood obtained by puncture of the spleen on the day before the roesolar rash appeared, showing that it reaches the skin through the blood vessels. It has later been found in the circulating blood. A body described as spirochaeta pallida has been once seen in a section of a syphilitic tissue. In acquired syphilis it is found only in primary and secondary manifestations, practically never in the tertiary stage. Most authors agree that it is never found in non-syphilitic lesions. The balance of evidence seems to be in favor of the etiological relationship of spirochaeta pallida to syphilis.

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OPHTHALMOLOGY.

IN CHARGE OF

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It may not be out of place to preface this Review by a word on a curious phase in the evolution of this branch of medical science. From the time of the discovery of the ophthalmoscope the tendency of ophthalmology has been toward isolation. Instead of fitting snugly into the great mosaic of the medical branches, contiguous to neurology, internal medicine, rhinology, etc., it has evinced an unfortunate exclusiveness, occupying a little place apart. This arose in great part, from the difference between certain of the problems of ophthalmology and those of other branches of medicine. It is difficult, for instance, to see any connecting link between the problems of optics and those, let us say, of internal medicine. Thus ophthalmic practitioners came to look upon an eye very much as dentists look upon a tooth—as being in the body but not an integral part thereof. In their daily practice they encountered so much that seemed satisfactorily explainable on a purely ophthalmic basis that they forgot or perhaps never realized the often scarce tangible but none the less real dependence of ocular defects on abnormal conditions of the economy. As the result of always directing the mental vision upon a plane surface they lost all sense of proportion and perspective.

That this unfortunate state of mind has wrought much harm can hardly be controverted. The man who has no sense of perspective is incapable of maintaining that openness of mind and freedom from prejudice indispensable to a scientific worker. If he develops an idea it inevitably undergoes hypertrophy. Is not the present hysteria on the subject of eyestrain the natural result of viewing the medical world through a tube? Is not dogmatic assertion the weapon of offense of the egoist with an obsession? Let those who decry achievements in other branches of medicine in the mad desire to establish a pet theory remember that Truth is a shy maiden and can not be won with alarums of the battlefield.

Happily signs are not wanting that a change is coming over the spirit of the ophthalmic world. The former disregard of general methods is being replaced by a deep appreciation of the value of the widest possible view. Thus will ophthalmology be rescued from that isolation which has prevented its proper coordination with other branches of medical science. And as one of the earliest consequences

will come the passing of the ophthalmic bigot whose smug self sufficiency has ever been a clog in the wheel of progress.

Anatomy and Physiology. An interesting study of the neuroglia of the optic nerve has been contributed by Jacoby[1]. He found that the neuroglial fibres were thickest at the level of the lamina cribrosa. On the floor of the physiological excavation the neuroglial elements mingled with the connective tissue remains of the hyaloid artery. In the disk proper the elements were extremely attenuated. Concentrically arranged neuroglial fibres formed the intermediate tissue (Kuhnt) between the chordal ring and the retina which, according to the author, could be seen ophthalmoscopically as a narrow, bright strip surrounding the nerve entrance. In the retina the elements ran, for the most part, perpendicular to the course of the nerve fibres.

An important physiological contribution is Bielschowsky's[2] paper "On the origin of unilateral vertical movements of the eyes." On the basis of experiments and theoretical considerations this writer comes to the conclusion that, in addition to the cortical centres for associated ocular movements, there exist for each eye secondary motor centres independent of each other and of the will. These secondary centres can evoke unilateral vertical movements only when the influence of the cortical centres is in abeyance (sleep, narcosis) or in the absence of the fusion faculty.

As is well known the image of a luminous point held in front of the cornea is reflected from three surfaces—the anterior surface of the cornea, the anterior and posterior capsules of the lens. The first and second are upright images, the third is an inverted image. Hess[3] has succeeded in demonstrating a third upright and a second inverted image, formed respectively by the anterior and posterior surfaces of the nucleus of the lens.

Bacteriology and Pathology. During the year the bacteriology of the various types of conjunctivitis has engaged the attention of numerous workers. In the light of our present knowledge a pure bacteriological classification of conjunctival inflammations is still not feasible, but that such a classification will come in the near future, the trend of all recent work seems to indicate. When this has been accomplished an immense step in advance will have been taken not only from the standpoint of scientific exactness, but also from the practical view of therapeutics. For instance, it is even now well recognized that diplobacillary conjunctivitis yields with surprising rapidity to solutions of certain zinc salts which are ineffective in other types of conjunctival inflammations clinically indistinguishable. A paper which covers the ground pretty thoroughly is that of Pollack[4].

It would appear from the investigations of Bednarski[5] that the

zonule of Zinn has hitherto received scant consideration from ophthalmic pathologists. At any rate the literature of the subject is very meagre. Bednarski avers that in pathological conditions the fibres are thicker, homogeneous and often exhibit hyaline degeneration. The thickening represents atrophy of the fibres. It might well be considered a barren year that did not give birth to a new theory as to the pathogenesis of senile cataract. This year we are invited by Roemer[6] to consider that the lens becomes cataractous owing to the attack of a poisonous substance which kills its protoplasm in a way analagous to that by which a red blood corpuscle is destroyed by the process of hemolysis. As the human organism is capable of developing cytotoxic substances of the most various kinds and of increasing the amount of others already present in the blood it is possible that, as the result of the degenerative processes of old age, antibodies are set free in the blood which possess a specific affinity for a certain definite part of the lens protoplasm, and which, provided that the secretory apparatus fails to keep them away from the lens can, by uniting with corresponding receptors of the lens protoplasm, damage the cells of the lens, just as blood cells are damaged by the attachment to them of specific cytotoxins.

The problem of the pathogenesis of choked disk has been attacked by a number of workers. It would appear, in the light of our present knowledge, that there is scant justification for a strict adherence to the "mechanical" theory or to the view that choked disk is the outcome of a descending inflammation. The theory of an inflammatory origin has, however, the support of the majority of facts. In a lengthy paper, Kampherstein[7] deals with the pathology and pathogenesis of choked disk in its clinical as well as pathological aspect. A histological examination of 51 eyes revealed distention of the intersheathe space in 62 per cent. no distension in 37 per cent., inflammatory infiltration in the intersheathe space in 75 per cent. The optic nerve was normal in 10 per cent., edematous in 60 per cent. and showed inflammatory changes in 56 per cent. In 64 per cent. inflammatory changes in the papilla were observed. The lamina cribrosa was pushed forward in 78 per cent. Raised pressure undoubtedly accounted for the choked disk of chronic hydrocephalus. However, the percentage of eyes in which there was neither edema of the nerve nor distension of the intersheath space was too large to warrant the acceptance of the mechanical theory as universally applicable. When meningitis was present the changes in the optic nerves and disks appeared certainly to be those of a descending neuritis. In the clinical part, the author gives a careful analysis of 200 cases of choked disk, controlled on the neurological side by such authorities as Westphal, Oppenheim, Thomsen and Remak. In this se-

ries there were 134 cases of brain tumor, 27 cases of brain syphilis, and 39 cases of other intracranial affections. In the large majority the normal pupillary reaction was preserved. It was present even in five cases of total loss of vision two of which showed a high degree of optic atrophy. The writer also refers to a case of post-papillitic atrophy in which, after eight years of blindness, both pupils reacted to light. Allusion is made to two groups of cases recently described by Nonne[8]: the first, presenting the symptom complex of cerebral tumor including choked disk, but terminating in recovery with atrophy of the optic nerves; the second, in which the patient dies with all the symptoms of cerebral tumor including choked disk, but in which pathological examination fails to reveal any changes in the brain or meninges.

The various factors concerned in the production, maintenance, and alterations of the intraocular pressure are still imperfectly understood. Much light has been thrown on the subject by Engelmann's[9] careful tonometric investigations in animals and human beings. After ligature of the common carotid in rabbits the intraocular pressure falls on both sides, the lowering being rather greater and persisting for a longer period on the ligated side. After ligature of the external jugular vein there occurs a temporary rise in pressure on the corresponding side. In the human, during Valsalva's experiment and muscular work, the state of the intraocular pressure corresponds to that of the general blood pressure, but is less marked. Intraocular pressure is diminished in chloroform, increased in ether narcosis. Stimulation of the sympathetic in rabbits causes a fall: resection of the sympathetic or extirpation of the superior sympathetic ganglion causes a gradual fall with subsequent rise to normal or above normal. In four humans, removal of the superior cervical ganglion (two glaucomas, two Graves disease) caused merely transitory decrease in intraocular pressure. Physiological variations in the width of the pupil had no effect on intraocular pressure. Contraction of the orbicularis causes considerable rise. In rabbits tenotomy of all the recti muscles causes a fall. Intraocular pressure does not vary with the rotation of the eyes provided that parallellism of the visual axes is maintained. During strong convergence pressure is increased, but accommodation disassociated from convergence has no such effect.

Vascular involvement of the cornea in trachoma varies from the invasion of a few extremely attenuated vessels barely visible with the loupe to a dense elevated fleshy mass. Very rarely the new formation partakes of the character of a pseudo-tumor. Such a case is described by Hirschberg and Ginsberg[10]. The cornea was covered by a greyish red prominent granulation mass, hanging over the conjunctiva

and flattened by the pressure of the lids. Microscopically this proved to be a pannus which, probably as the result of tuberculous contamination, had given rise to granulation tissue. Benign tumors of the fundus are sufficiently rare to warrant allusion to a case reported by Manch[11]. A greyish nodular tumor projected 4 mm. into the vitreous: this was associated with a round black area at the site of the macula. The patient was under observation seven years, during which time no change took place in the appearance of the tumor. Cysts of the pars iridicae retinae is the subject of an important contribution by Oatman[12]. A serous cyst, situated on the posterior surface of the iris was found microscopically to have resulted from the separation of the layers of pigmented epithelium which form the retinal tract of the iris. The condition is therefore entirely analagous to detachment of the retina proper and is designated "detachment of the pars iridicae retinae."

Deformities of the skull associated with exophthalmus and blindness has been the subject of a number of papers. Uhthoff[13] presents three cases. In the first there was marked peaked skull with neuritic atrophy of the optic nerve and blindness. In the second external hydrocephalus with pachymeningitis and optic neuritis. In the third intense internal hydrocephalus Gross alterations in the shape of the orbits consequent upon dislocation of the cranial bones explains the pushing forward of the globes. Patry[14], in a very carefully worked up monograph, presents a study of ocular lesions in Tower Skull. The principal features are pronounced exophthalmus, frequent divergent squint and post neuritic atrophy of the optic nerves. The dome shaped skull, rising from the forehead and separated from the temples is characteristic. The supraorbital ridges are entirely absent. The cranial deformity, which is due to premature synostosis of the coronal and sagittal sutures, begins in earliest infancy. Relatively good vision is often maintained. Individuals thus afflicted are usually of a low order of intelligence, but there are many notable exceptions to this rule, as witness Sir Walter Scott, Humboldt and Paracelcus, all of whim had this cranial deformity in marked degree. Patry believes, with Virchow, that a meningitis is the primary cause of both the optic neuritis and the cranial deformity.

Lids. The ordinary form of blepharospasm, namely, that evoked reflexly by conjunctival and especially by corneal irritation is usually easily and quickly cured by removal of the cause. Another type is dependent, at least in part, on refractive errors. Finally there occur, very rarely, extremely severe cases of blepharospasm in elderly people in which it is difficult or impossible to determine an etiological factor. Such cases are in a most wretched condition, being to all intents and

purposes blind from the nearly constant closure of the lids and go the rounds of oculists and neurologists in the vain hope of obtaining relief. Medical and the milder forms of surgical intervention, such as subcutaneous section of the branches of the facial nerve, have proved wholly ineffective. A case reported by Abadie and Cuneo[15] was first subjected to section of the frontal and infraorbital nerves and later to resection of a considerable portion of the orbicularis without relieving the spasm. Cuneo then sectioned the facial nerve and implanted the peripheral end in the external branch of the spinal accessory, with ultimate entire relief from the spasm.

Lachrymal Apparatus. Considerable interest has recently been shown in the subject of dacryoadenitis, which receives scant consideration in the majority of textbooks, on the assumption that the disease is rare and unimportant. Recent papers seem to indicate that this assumption is erroneous. For instance, Inman from the Royal London Ophthalmic hospital reports ten cases occurring within a period of two years. The association of urethral gonorrhoea with acute inflammation of the lacrimal glands is occasionally observed. Such cases bear some resemblance clinically to specific gonococcal ophthalmia except that the discharge is scanty and does not contain gonococci. The disease is probably due to toxines of the gonococcus. Pes[16] describes four cases, in all of which recovery was prompt under simple measures. The reviewer recently has had the good fortune to observe a similar case. The whole subject is carefully gone over by Wicherkiewicz[17].

Conjunctiva. The etiology of vernal conjunctivitis remains an unsolved problem in ophthalmology. Histologic examinations have thrown but little light on the ultimate origin of the disease. In this connection an interesting observation has recently been made by Dimmer[18]. He reports a cure of the disease by simply keeping the patient in the dark and infers, therefore, that light is the causative agent. The lesions of phlyctenular conjunctivitis have hitherto been described as confined to the bulbar portion of the membrane. Schiele[19] has recently demonstrated the presence of elongated and flat blebs in the tarsal conjunctiva. These vesicles become open ulcers which coalesce and form large defects. In other cases he observed firm collections of lymphoid cells. That curious affection—conjunctivitis nodosa—has been the subject of careful investigation by a number of observers. De Schweinitz and Shumway[20] give a very good account of a case with histologic examination. The disease is due to the presence in the conjunctiva, and episclera or rarely in the iris of the hairs from certain species of caterpillars. Each hair forms the centre of a nodule which contains microscopically giant cells and round cell

and lymphocytic infiltration. Spindle cells have been noted in a number of instances and sometimes a fibrous capsule is present. Indeed the macroscopic and microscopic appearances are such as to justify Wagenmann's appellation of "Pseudotuberculosis of the conjunctiva." The hairs may penetrate deeply but are prevented from returning by spines coming off from the shaft at acute angles. The irritation may be mechanical or possibly due to formic acid which is present in the hairs. Bacterial infection is absent. Conjunctival irritation excited by proximity to a horse is the subject of an interesting paper by Posey[21]. This hitherto unrecognized clinical entity has a symptomatology similar to that of hay fever and occurs in certain individuals who manifest a peculiar susceptibility to chemical or bacterial substances which emanate from the horse. An elaborate consideration of tuberculosis of the conjunctiva is offered by Villard[22]. It is impossible to give even a faint outline of this splendid paper which really sums up all our present knowledge of this disease. The possibility of the disease originating from a nasal tuberculosis by way of the lacrimal passages is pointed out. Villard believes in an exogenous origin and endorses the hypothesis of Fuchs that the tuberculous virus enters through minute conjunctival abrasions caused by the presence of small foreign bodies.

Cornea and Sclerotic. Until recent years the occurrence of corneal inflammation in acquired syphilis has been universally denied. That this position is erroneous is proved by the ever increasing number of reported cases in which inherited syphilis can be positively excluded and which respond to the therapeutic test. From an examination of cases in literature Villard[23] has attempted a clinical classification as follows (1) Interstitial keratitis (a) diffuse (b) localized. (2) Primary punctiform keratitis. (3) Gummatous keratitis. Concerning the last named Villard expresses a doubt as its ever having been observed. That it does occur though rarely seems reasonably certain in the light of cases recently reported by Vinsonneau[24] and Terson[25]. The relation of the diplobacillus of Morax-Axenfeld to ulceration of the cornea seems to indicate that this organism is by no means as harmless as has been assumed. In 26 cases of corneal ulcer resembling clinically serpent ulcer Paul[26] was able to demonstrate diplobacilli on the floor of the ulcer unaccompanied by any other organism to which the process might be ascribed The ulcers were round and shallow and surrounded by diffuse infiltration. It is of the utmost importance that such ulcers be differentiated bacteriologically from infections due to the pneumococcus, as the specific zinc salt treatment of the one would be without effect on the other. In this connection Erdman's[27] investigations on the resisting power of the diplobacillus in dried

secretions is of interest. He was able to inoculate Loeffler's serum with dried diplobacillary discharge and cultures therefrom were capable of infecting the conjunctiva. A rare cause of corneal ulcer is the streptothrix recently investigated by De Berardinis[28]. He reports two cases: one mild, terminating in leucoma, the other severe ending in panophthalmitis. It seems possible that streptothrix ulcers have remained undiscovered or been ascribed to diplococci owing to the loss of the typical branched appearance in unsuitable media. He advises cultivation on blood serum. Injuries to infant's eyes from pressure of obstetrical forceps have been alluded to in a former Review. Cases of traumatic keratitis in the new-born have been reported by Stephenson[29] and Fejer[30] In this connection it may be interesting to refer to the classification of Thomsen and Buchanan who describe three forms of traumatic keratitis in the new-born (1) Diffuse temporary opacity (due to edema) (2) Diffuse permanent opacity (edema followed by inflammation or detachment of Descemet's membrane) (3) Permanent linear opacity (linear rupture of posterior elastic lamina of the cornea with subsequent formation of cicatricial tissue).

Iris and Ciliary Body. The occasional development of iritis in the course of a gonorrhoeal urethretis has led to the pretty generally accepted belief in a relationship between the two of cause and effect. This view has been vigorously attacked by De Lapersonne[31] who contends that the case for a gonorrhoeal iritis must at least be considered "not proved." Campbell[32] describes three cases of iritis, without history of syphilis or rheumatism, but associated with pyorrhoea alveolaris. Treatment with mydriatics was ineffective until combined with treatment directed to the oral disease.

The peculiar expression of the eyes of tabetics is due to several factors, namely, miosis, slight enophthalmus, narrowing of the palpebral fissure, and absence of the light reaction of the pupil. In addition Dupuy-Dutemps[33] notes the change in the appearance of the iris loss of the normal prominences of the anterior surface so that the iris appears practically devoid of all relief. The deformity of the pupil so frequently observed is due to partial atrophic changes in the iris; that portion of the pupillary border corresponding to the atrophic zone is that which has the greater radius of curvature. Histological examination of one case showed simple atrophy of the iris fibres.

Lens. The subject of artificial maturation of the cataractous lens is an important one and deserves rather freer discussion than has recently been accorded it. The patience of surgeon and sufferer alike is apt to be exhausted by the postponement of extraction for months and years or until the lenticular condition has reached by natural pro-

cesses that degree of maturity which experience has shown yields the highest percentage of clean and satisfactory operations. Stroking of the cornea against the lens after preliminary iridectomy is praised by McHardy[34] in no measured terms. A new method based on the observation that cataract frequently develops in eyes exposed to great heat has been published by Wolfberg[35]. By means of an apparatus he directs a current of hot air at 70 degrees C. upon the eye for a short time several times daily. He has used the method three times after discision of the lens in myopia and three times after iridectomy preliminary to the extraction of the lens in senile cataract. The time required to attain ripening was about eight days. The "non-operative cure of cataract" is a title suggestive of a brochure issued by the manufacturers of that great "resolvent" of cataract "Cineraria Maratima." But that is precisely the subject discussed by one of the most eminent French ophthalmologists—De Wecker. The revival of interest in this subject must be largely ascribed to Verdereau of Barcelona who reports astonishing improvement in vision after a course of subconjunctival injections of potassium iodide. This work is still too newly fresh to warrant critical comment and to the best of the reviewer's knowledge has not been confirmed. Ossification of the lens is described to two cases by Roure[36]. The surface consisted of a thin, hard yellowish layer and the interior of a white substance exactly resembling chalk which chemically consisted of carbonates and phosphates. Throughout the lens bone corpuscles were found in abundance.

Vitreous. The role, if any, played by the vitreous in idopathic and myopic detachments of the retina is a question that is still undecided. Best[37] has observed a slight peripheral displacement of the vitreous with each movement of the eye, this shifting being immediately followed by readjustment and believes he has found an explanation for idiopathic detachment. Elschnig, on the contrary, as the result of a microscopic examination of 17 eyes with myopia from 2 to 30 dioptres and of 5 eyes with posterior staphyloma or with coloboma of the optic nerve concludes that true detachment of the vitreous is rare and he is therefore opposed to the theory that vitreous detachment is the usual precursor of detachment of the retina.

Retina and Optic Nerve. That curious disease—amaurotic family idiocy—has engaged the attention of several writers, notably Eliasberg[38], Poynton and Parsons[39] and McKee, Buchanan and Shumway[40]. A histological examination by Shumway confirms Holden's view that the essential changes in the eye are degeneration of the ganglion cells of the retina and of the nerve fibres of the optic nerves and tracts. The consensus of opinion seems to be that the condition is a true degenerative one. In these cases there is always present an

inherited essential failure of vitality—the so-called "abiotrophy" of Gowpers. Lesions of the optic chasm frequently go unrecognized according to De Schweinitz and Carpenter[41], because of failure to determine the precise character of the visual field, for which determination the most refined methods are absolutely indispensable. The most characteristic alteration of the visual field is a bitemporal hemianopsia which is pathognomonic. Simple and post neuritic atrophy, partial atrophy, optic neuritis of all grades of severity and choked disk all occur in diseases of the chiasm. Sympathetic disease manifesting itself solely in the retroocular portion of the optic nerve is the almost unique observation of Consiglio[42]. There appears to be only one other case in literature. An observation of great interest is that by Sachsalber[43] on the total disappearance of medullated nerve fibres in the retina after inflammatory atrophy of the optic nerve from cerebral tumour. The possible disastrous effects of iodoform on the eye is well illustrated by Mohr's[44] case of papilloretinitis (later atrophy) following the injection of a ten per cent. iodoform emulsion in coxitis.

Injuries and Entozoa. Radical ruptures of the iris are much less frequent than peripheral detachments from the ciliary body. Of extreme rarity is double radial rupture. Ayres[45] describes such a case following gun shot injury to the lower lid in which the iris was detached from both sides as well as from the ciliary border. A burn of the eye and lid by potassium permanganate crystals is reported by Powell[46] with complete recovery under the use locally of castor oil. The successful removal of a subretinal cysticercus situated below and external to the papilla is reported by Bardelli[47], who comments on the value of Folsini's method for determining the presence of intraocular cysticercus. The method is as follows: Light is projected into the immovable eye at a distance of 50 cm. If the parasite be present the pupil is seen to be occupied by a shadow which shrinks and expands, occasioned by the movement of the cysticercus.

Sympathetic Ophthalmia. The rare occurrence of this disease after panophthalmitis seems now to be well established. A case has been published by Ahlstrom[48] who refers to two prior cases published by Schirmer. Reference was made in the Review for 1903 to the cytotoxine theory of sympathetic ophthalmia elaborated by Pusey. A similar conception has been developed by Golovine[49] who holds that there is brought about a destruction of ciliary cells whose absorption gives rise to the formation of cytotoxines in the system. Under certain conditions these cytotoxines are conveyed to the fellow eye where they are capable of setting up a similar process in the corresponding ciliary region. Organisms in the blood might also contribute but their role would be a subsidiary one. In pursuance of this theory, Golo-

vine endeavored to cause heterotoxines to be elaborated by animals of one species which should be specific for animals of another. He injected repeatedly into the peritoneal cavity of the rabbit an emulsion made from the ciliary body and iris of the dog. When the cytotoxic serum is injected into the eye the same picture is always presented: circumcorneal injection: numerous small deposits on the posterior surface of the cornea as in keratitis punctata; fibrinous exudate into the anterior chamber, and iritis. Microscopically, theanterior chamber contains a sero-fibrinous exudate with phagocytes full of pigment granules, iritis, infiltration of the pectinate ligament: fibrinous exudation into the ciliary body in which pigment bearing leukocytes are imbedded. The cells of the ciliary body are swollen, the nuclei atrophied and often vacuolated. When the serum is injected into the general circulation there are no visible ocular changes but microscopically there is found a fibrinous exudation under the epithelium, swelling of the epithelial cells, and vacuole formation in the nuclei. There is intense depigmentation of the pigmentary layer.

Glaucoma. In the diagnosis of glaucoma simplex increasing importance is attached to the exact determination of the visual field by the method of Bjerrum. This is made with a black velvet screen placed at 1 to 2 metres from the patient, the test objects being minute ivory balls. In glaucoma (in distinction to optic atrophy(there exists a defect in peripheral acuteness which extends right up to the blind spot. Increased tension after contusion of the globe is ascribed by Peters[50] to a change in the consistency of the aqueous which becomes gelatinous thus mechanically obstructing the circulation in the angle of the chamber. Cloudiness of the cornea in glaucoma has generally been ascribed to edema of the stroma. Silex[51], who has made a very careful study of this condition concludes that the cloudiness is due to a multiple reflection of light incident to the formation of doubly refracting elements by the stretching of the corneal fibres. It would appear that less and less attention is being paid to sympathectomy, but that it may occasionally be of immense service is indicated by Henderson's[52] report of excellent results from total bilateral removal in chronic congestive glaucoma and in glaucoma simplex after unsuccessful iridectomies. Paracentesis of the anterior chamber by galvanopuncture as a compromise between iridectomy which may be refused by a timid patient and no operation at all is suggested by Haberkamp[53]. He has found that a puncture made in this manner heals very slowly so that drainage is prolonged.

Therapy. Several reports adverse to the use of Roemer's pneumococcus-serum in serpent ulcer have been published, notably by Zur Nedden[54] and Paul[55] Roemer[56] himself (as is generally the case with inventors) claims an almost specific action for his serum. Intraocular disinfection by iodoform appeared to have earned for itself a perma-

nent place among ophthalmic therapeutic methods. An opposite view is held by Krauss[57] , who, from an examination of the literature and personal animal experimentation concludes that iodoform disinfection rather hinders cure and does not invariably prevent sympathetic disease. He believes that the application of general surgical principles in infected wounds of the eye would give better results. Dionin is gaining wider and wider recognition as an extremely valuable agent in a large number of external and internal diseases of the eye. In subconjunctival injection it was found by Blanco[58] to cause resorption of a severe intraocular hemorrhage with restoration of vision to normal. The wisdom of the routine application of an occlusive dressing in many ulcerative affections of the cornea is called in question by McGillivray[59] in a paper entitled "The importance of the corneal temperature and nictitation in corneal therapeutics." By means of the thermo-electric couple he determined that the temperature of the cornea was 188 F. below that of the body. Closure of the lids, as from photophobia, raises the temperature of the cornea to the point most favorable to microorganic growth. At the same time the abolition of winking is disadvantageous as normal nictitation is an efficient means of freeing the corneal surface of germs. For corneal ulcers which refuse to heal under the lotion, atropin and bandage treatment Lawson finds that a 1 per cent. solution of quinine sulphate is remarkably efficacious.

Daxenberger[60] has used with success a 10 per cent. solution of aristol in oil of sesamum, especially in blepharitis, lime burns of the conjunctiva and cornea and in phlyctenular keratitis. A novel method of treating tobacco amplyopia is advanced by Wray[61]. On the assumption that the tobacco poison is largly eliminated by the kidneys, he orders his patient to drink copiously of warm water several times a day. Several cases are reported in which cure was effected in a short time, the patients continuing meanwhile the moderate use of tobacco. In view of the increasing popularity of preparations of suprarenal gland it should be noted that occasionally unlooked for and untoward results may attend their use. Thus Senn[62] used adrenal in 1-1000 in conjunction with eserin 1 per cent. in a case of chronic glaucoma. Fifteen minutes later his patient was suffering intense pain, the globe was "glassy white" and stony hard and the pupil was dilated *ad max.* Valude[63] has found that antipyrin is remarkably efficacious in optic atrophy consecutive to acute infectious cerebral processes. Stovaine, the new anaesthetic, seems to have acquired a permanent place in ocular therapeutics, especially in subconjunctival injections. A new anaesthetic-alypin-is commented upon favorably by Stephenson. Liekienik[64] reports a series of 310 cases of trachoma treated by means of a glass ball 7-10mm. in diameter mounted on a long handle. The ball is dipped in an antiseptic so-

lution, introduced under the lid and stroked back and forth. It is claimed that both granulations and pannus yield quickly.

Operations. The ancient question as to the advisability of enucleating during panophthalmitis is discussed by Enslin and Kuwahara who had the misfortune to lose a patient from acute meningitis following removal of a chronically inflamed soft globe. During operation the sclera was buttonholed and the fresh cut tissues of the orbit were apparently infected by the intraocular bacteria. The weight of present day opinion seems to be against enucleation although strong support is given the opposite view (Nettleship, Marshall). An interesting controversy as to the relative merits of sclerotomy and iridectomy was waged between Dianoux[65] and Abadie. Abadie, the champion of iridectomy, avers that sclerotomy is powerless to check the glaucomatous process and that the benefits derived endure only a few weeks. Dianoux, who has abandoned iridectomy entirely, believes that the crux of the whole matter lies in an imperfect understanding of what is meant by sclerotomy most operations going by this name being, in Dianoux's opinion, little better than paracentesis. He operates as follows: puncture and counterpuncture are situated at the root of the iris, as indicated by the engorged vessels coming from Schlemm's canal. After rotary movements to permit the escape of aqueous, the wounds are enlarged to 3mm. The next step consists in withdrawing the knife into the anterior chamber, the point marking out a furrow in the angle of the cornea and iris up to the wound of entrance It is essential that the true sclera be incised. The after treatment is just as important as the operation which is merely the first step in the management of the case. Twelve hours after the operation the dressing is removed and the globe gently massaged, thus effecting a partial reopening of the wounds and causing an escape of aqueous into the spaces under the conjunctiva. This procedure is repeated for the next 4-5 days and a collyrium of eserin, pilocarpin and cocaine is used. Dianoux is convinced that if the patient gets sufficiently interested in the mechanics of his own case to carry out a prolonged after treatment with miotics faithfully he will be permanently relieved of his trouble. motions faithfully he will be permanently relieved of his trouble. An observation of Axenfeld that a certain proportion of glaucomas operated by iridectomy or sclerotomy showed a detachment of the choroid led Heine[66] to investigate whether an artificial communication between the anterior chamber and the suprachoroidal space might not be an efficient means of lowering intraocular pressure. The communication was effected by pushing a stylet through a scleral puncture, penetrating the pectinate ligament and thus entering the anterior chamber. The results in twenty blind glaucomatous eyes were distinctly encouraging, all showing permanent decrease in tension. The

operation is called "cyclodialysis." The deplorable condition known as "cicatricial orbit" in which the contraction of the socket after removal of an eye reaches such a degree that the wearing of an artificial eye is impossible has engaged the attention of a number of operators, notably Grunert, Gullstrand and Hotz.[67] Through their efforts and that of Maxwell the condition can now be attacked with every prospect of success. Two successful cases of the Maxwell operations have recently been reported by Ball[68].

Instruments and Apparatus. A needle holder for straight and curved needles has been devised by Cole Baker. Four rods are clamped together at one end, the other ends being bevelled so as to admit of separation. Over the rods runs a tube one inch in length which can be freely moved toward either the clamped or free ends. The latter can thus be made to close over a straight or curved needle which is firmly held. In use the instrument is simply rotated by the fingers thus insuring a delicacy and accuracy greater than with needle holders of the ordinary type. Several devices for applying a stream of warm air to the eyes and adnexa have been described. Hoor's[69] apparatus consists of two small boxes fastened on a V-shaped holder. Asbestos interwoven with electric wires which can be attached to the street current furnishes the heat. Two very ingenious clamps for holding the lid in eversion and controlling hemorrhage have been devised by Ewing[70] to facilitate incision of the tarsus in his operation for entropion. The reviewer has had some experience with these clamps and finds they are simple and effective for the purposes designed.

Amblyopia and Visual Defects. Heine[71] avers that the cause of congenital amblyopia in 90 per cent. of the cases is a round or oval absolute or relative central scotoma. The condition is either functional in which case it is acquired in early infancy or congenital and then anatomical. Ophthalmoscopic changes are not missing entirely but are rare. Often the only sign will be a difference in the macular and foveal reflexes of the two eyes. Stuelp's[72] report of a case of amaurosis from Felix Mas gains its especial interest from the fact that it is the first case in literature in which an ophthalmoscopic examination was made shortly after the onset of blindness. The pupils were dilated and fixed. The entire fundus was covered with a copious snow-white edema. The arteries were like threads with columns of blood broken into little portions; the veins were tortuous and filled with broad and dark columns of blood. One month later the disks were white, the fundus splotched with white and a triangular grey red spot occupied the fovea. A very few arteries, yellowish and cord like, could be seen here and there. Stuelp believes that the poison, conveyed by the blood stream, irritated the finer muscular tissue of the vessel walls and caused spasmodic

contraction followed by paralysis of the muscular coat, vascular stasis, and deeper paralysis of the ganglion cells and prolongations.

Refraction and Optical Questions. Permanent myopia developing as the result of traumatism is the subject of an interesting paper by Bourgeois[73]. The condition is probably not as rare as the rather scanty literature would seem to indicate. In hitherto recorded cases the myopia has been temporary. The forward propulsion of the lens becomes possible only by the stretching or tearing of the zonule of Zinn. As the lens and iris are thrown forward the aqueous is forced backwards into the posterior chamber or circumlental space and that space remains distended by aqueous unless the fibres of the zonule recover sufficiently to draw the lens back and so relieve the pressure against the iris. A most interesting study and one that has a distinctly practical bearing is that by Lagrange[74] on the change in the grade of astigmatism with increasing years. He has determined that the astigmatism of hyperopes has a marked tendency to increase with age and this tendency is greater if the patient has never worn correcting lenses. The astigmatism of myopes, on the contrary has a slight tendency to diminish. The change, as indicated by retinoscopy, seems to be an increase in convexity of the horizontal meridian of the cornea. These results suggest the advisability of undercorrecting astigmatism in young persons. Modification of one meridian of the corneal curve has been observed by Deschamps[75] to follow subconjunctival injections, an effect attributable to traction on the cornea by the conjunctiva which has become adherent to the sclera. Test types consisting of alternate red and green stripes 6mm. in diameter, running at different inclinations to conform to the different meridians of astigmatism have been devised by Polack.[76] When viewed at 5 metres the hyperope sees the green bars white and the red a dull red: the myope sees red as pale rose and the green as a grey: the emmetrope the green as full green and the red a bright red. The testing is carried out in the ordinary manner with the lens box.

Disturbances of Motility. The subject of associated movements of the head and eyes in infants is described by Hamill and Posey[77] who report three cases. In all there were constant shaking movements of the head and nystagmus. The immediate etiological factor is unknown but it appears that rickets is a predisposing factor. The authors incline to the view that the seizures point to instability of the motor centres above the nuclei in the spinal cord and fourth ventricle, therefore attributing the disorder to a functional or other disturbance of the cerebral cortex. The child has acquired certain voluntary or purposive movements of the head and eyeballs but these have not as yet become thoroughly organized and fixed in the psycho-motor areas of the

brain. Hence a dissolution takes place because of the inability of the strained cortical centres to stand the work to which they have been too early subjected.

Relations with Medicine. It is well known that optic neuritis occasionally develops during the course of typhoid fever. Its occurrence in paratyphoid is reported by Flautau.[78] Tetanus following injuries to the eye is very rare. Two cases have been published—one by Ramsay[79] following a contusion wound of the outer canthus, the other by Oeller[80] following panophthalmitis. It is a curious fact and one difficult to explain that the prognosis for life in diabetic retinitis is rather better than in the similar retinitis of Bright's disease. Nettleship[81] reports a series of forty-eight cases of retinal changes in diabetes of which 60 per cent. were living two years later and only 20 per cent. died within a year. The ocular complications of cerebro-spinal meningitis are discussed by Heine[82] who recognizes three principal groups. 1st. Affections of the motor apparatus. Infrequency of winking is of diagnostic value as an early sign. Sixth nerve paralysis is frequent. All the extrinsic muscles are at times involved. 2d Retinal hemorrhages, slight optic neuritis. Basilar meningitis is responsible for sudden blindness without ophthalmoscopic change. 3d. Metastatic uveitis, pyemic panophthalmitis the pus containing Weichselbaum's diplococcus. The occurrence of panophthalmitis does not appear to make prognosis any more grave.

Teilleis[83] has published a new ocular sign in exophthalmic goitre, namely, abnormal brownish pigmentation of the eyelids.

Eye and Sinuses. The role played in diseases of the eye by the accessory sinuses of the nose is yearly gaining wider and wider recognition. Posey[84] in a short but highly instructive paper refers to some ophthalmologic phases of diseases of the accessory sinuses. He notes slight optic neuritis in ethmoid, sphenoid and antral disease. Other ocular symptoms are edema of the lid, paresis of the extraocular muscles, pseudo-migraine ophthalmique etc. Uveitis and vitreous opacities are ascribed by Fish[85] and Patterson[86] to accessory sinus disease. The pain in such cases is referred to the eye. Fish's six cases of uveitis were cured by probing and syringing diseased frontal sinuses.

Miscellaneous. The actual conditions under which enginemen have to work was investigated by N. M. Black, who, armed with a camera, travelled several thousand miles in an engine cab. He secured very valuable data tending to show that various external conditions may alter the appearance of signals or obscure them altogether. Black believes that it is often impossible for the engineer to discern the precise character of a signal and is surprised that accidents are not more frequent than they are.

New Publications. The following is by no means exhaustive but is believed to include most of the new books of importance. "Die Wirkungen von Arznei-Mitteln und Giften auf das Auge" by Lewin and Guillery. "Encyclopedie francaise d'ophtalmologie"—Tome quatrieme—by Lagrange and Valude. "Syphilis of the Eye" by Terrien. "Ophthalmic Operations" by Czermak. "The Muscular Tissue of the Human Iris; its Structure and Development" by Forsmark. "Errors of Refraction" by Charles Blair. "The Conjunctiva in Health and Disease" by N. B. Harman. "Atlas and Epitome of Operative Ophthalmology" by Haab and De Schweinitz. "Investigations on the Pigmentation of the Retina" by Hirsch "The Ophthalmic Year Book for 1905" by Jackson and De Schweinitz. "Ocular Affections Connected with the Female Genital Organs" by Berger and Loewy. "Local Anaesthesia in Ophthalmology" by Prof. Best. "The Artificial Eye" by Robert Coulomb.

The deaths of the year include Johann Hjort, Parinaud and Frank Buller.

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